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VITAMIN C REQUIREMENTS OF NATIVE MINE LABOURERS*

AN EXPERIMENTAL STUDY

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Scurvy appears occasionally among the 350,000 natives employed in the gold mines of the Witwatersrand; thus during 1939, 220 cases were reported, distributed over 73 per cent. of the larger mines. As most of these natives are housed and fed under strict supervision in compounds specially built for this purpose it was thought that conditions were particularly favourable for an investigation into the vitamin C requirements of men engaged in fairly strenuous physical activity. The following is a condensed report of an experiment the particulars of which have been published in considerable detail elsewhere (Fox, Dangerfield, Gottlich, and Jokl, 1940).

The Investigation

A mine in which scurvy had been diagnosed with rather greater frequency than the average was chosen for study. Two groups, each of approximately 1,000 natives, who had just arrived from their kraals, were selected in such a way that the ages, tribal distribution, and general physical condition were as comparable as possible. One group, referred to as the control group, was kept on the usual diet, while the other, known as the test group, received a daily additional ration of 40 mg. of ascorbic acid in the form of an orange-juice concentrate kindly provided for us by the South African Co-operative Citrus Exchange and prepared by Messrs. Tomango, Limited, of Merebank, Natal. The vitamin content of the concentrate was periodically checked, and its regular consumption was assured by administering it before the main meal of the day.

The experiment was continued for a period of seven months—from November, 1938, to May, 1939—since the records have shown that it is during our summer months that this disease is most prevalent. The diet consisted of the usual mixture of maize meal, bread, meat, vegetables, and Kaffir beer. Owing to many variations in the quantity, composition, time of cooking, and time of issue before actual consumption of the approximately 5-oz. vegetable ration it was unfortunately impossible to determine with any degree of precision what the daily intake of ascorbic acid in the diet amounted to, but from various estimates and actual tests it was considered to vary within the limits of 12 or 15 to about 25 mg. a day. The effect of the additional ration was investigated as follows:

(*a*) A clinical examination of the natives was made at the beginning and the end of the experiment; (*b*) the incidence of the various diseases and the time spent in hospital were studied; (*c*) an inquiry was made into the efficiency of the natives at their various occupations; (*d*) several biochemical tests were applied both to healthy subjects and to those admitted to hospital; (*e*) their gums were examined, in many cases both at the beginning and at the close of the experiment; (*f*) the physical efficiency of subjects from both groups chosen at random was compared by means of certain athletic tests.

Throughout the experiment care was taken to organize the work in such a way that those carrying out the various tests were unaware of the group to which the individual being studied belonged. Moreover, no attempt was made to analyse our findings until the whole experiment was completed.

Results

After making allowances for the losses which are inevitable in experiments of this type it was found possible to compare 950 natives in each of the two groups. Analysis showed excellent, though not of course complete, agreement between the groups in respect to age, tribe, grade (that is, classification according to initial degree of physical fitness), actual number of days on the experiment (some did not complete the full seven months), nature of employment, and home conditions before joining the mine (that is, abundance or otherwise of food supplies).

General Condition.—No striking difference was noticed between the two groups at the end of the experimental period so far as general condition was concerned. The change in weight over the seven months averaged as follows:

TABLE I.—*Weight Changes (1 lb. or More)*

	Control Group		Test Group	
	Number	Mean Loss or Gain	Number	Mean Loss or Gain
Lost weight	304	3.4	292	3.0
Stationary	119	—	120	—
Gained weight	527	4.4	538	4.4

* Abstract of papers read on March 21, 1940, before a meeting of the Transvaal Mine Medical Officers' Association.

Working Efficiency.—Underground officials were provided at the beginning and close of the experiment with a form on which to report whether in their opinion the native specified (*a*) should be given lighter, the same, or heavier work, (*b*) whether he could be considered a lazy, medium, or hard worker, (*c*) whether he was stupid, average, or intelligent. It was realized that this was a very rough test, but it was thought that any *significant* improvement in general health should be reflected in general behaviour. Five hundred and ninety-nine such reports were returned, but the results did not indicate any significant difference in working efficiency between the natives in the two groups. That the working efficiency of the subjects in both groups was very high may be judged from the fact that during the whole period of the experiment no fewer than 99.1 per cent. of the possible shifts were actually worked. Shifts lost through accidents are not included.

Medical Findings.—The usual conditions for which mine natives require hospital treatment were encountered in both groups, and with the exception of scurvy it was found that both treated and untreated groups suffered from them *to the same extent.* Thus the number of cases and the number of shifts lost per case were recorded for minor ailments, influenza, colds, pneumonia, otitis media, mumps, chicken-pox, rheumatism, abscesses, and tuberculosis. There were 291 such cases in the control and 351 in the test group, the shifts lost per case averaging 4.51 and 4.94 respectively. The complete lack of success in protecting the treated group from such infections by the daily and long-continued administration of a considerable ration of ascorbic acid was one of the most striking results obtained from this investigation, particularly when the really low intake of the untreated group is considered in relation to the strenuous nature of the work upon which many of these natives were engaged.

Wounds.—Owing to the variety of the injuries sustained and the difference in situation and severity it was naturally difficult to compare the rate of healing of wounds and fractures; however, a rough division into contusions, minor and major wounds, and fractures failed to indicate any evidence of acceleration in the rate of healing amongst the patients in the test group. The shifts lost per case for the above four categories averaged 7.0, 8.4, 35.1, and 52.4 for the untreated and 6.3, 11.4, 32.5, and 57.0 for the treated natives.

However, when considering the negative findings for wound healing it is most important to state that the issue of orange-juice concentrate was deliberately stopped as soon as an individual from the test group entered hospital, since our object in this experiment was to compare the response to the change from the *previous* diet. An experiment has been started in which the response to treatment in hospital with large doses of ascorbic acid is to be studied.

Scurvy.—One mild case of scurvy occurred in the test group (diagnosed by gum condition only) and twelve cases in the control group. A statistical test indicated that it was most improbable that this difference in incidence would arise by chance, and seems to show that the amount of antiscorbutic vitamin in the basal diet must have been near the minimum protective dose. It also indicates the protective value of the concentrate used. The native contracting scurvy in the test group stoutly maintained that he regularly consumed the orange-juice concentrate. If this was really so it must be presumed that he failed to absorb the vitamin properly (McGovern, Gannon, and Wright, 1939).

Biochemical Findings

Urinary Excretion of Ascorbic Acid.—Previous experience of the very low urinary excretion of ascorbic acid by natives who appeared to be in excellent health, as well as recent literature on the subject, had so shaken our faith in the diagnostic value of this test that it was not adopted as a routine, although numerous isolated estimations were made.

Capillary Fragility.—Capillary fragility tests were carried out on a large number of subjects from both groups, including healthy and sick natives as well as patients in hospital with frank scurvy. Dalldorf's method was used with negative pressures of 25 and, later, 50 cm. mercury. No difficulty was found in observing the results of this test, even on dark skins. *In not a single case did we obtain a reaction that could be classified even as weakly positive,* in spite of using the high negative pressure mentioned. In over 300 of these tests the amount of ascorbic acid in the plasma was also determined, and, as will be seen later, this was invariably found to be of a low order. An examination of the literature had already convinced us that this test is of doubtful value in the diagnosis of scurvy or the subscorbutic condition, but we had not expected to find such a uniform lack of response even in cases of scurvy. Our own experience with Europeans had confirmed the objection usually made to this test—namely, the number of falsely positive readings that are obtained. Further investigations into this curious lack of sensitivity shown by Bantu capillaries is being planned.

Rotter's Intradermal Test.—This test is somewhat difficult to apply to dark skins; fortunately a considerable proportion of our natives have medium- or light-coloured skins. A large series from both groups were subjected to the test, the ascorbic acid content of the plasma being determined at the same time. As reported by several other observers, and as will be seen from Table II, this test is of little or no value for the purpose for which it was suggested.

TABLE II.—*Rotter's Intradermal Test*

	No. of Cases	Mean Time (min.)	Range Observed (min.)	Range of Ascorbic Acid Values (mg. per 100 c.cm. Blood)
Control group ..	16	9.3	6.0–13.6	0.13–0.31
Test group ..	16	11.3	5.6–20.8	
Scurvy cases ..	18*	10.4	6.0–20.4	0.11–0.30

* Including a few cases not in the experiment.

Ascorbic Acid Content of Blood Plasma.—The technique employed was a modification of that described in 1934 by Farmer and Abt. A series of tests carried out on Europeans gave the usual findings, with figures ranging from 0.28 to 2.4 mg. per 100 c.cm. blood, according to the previous dietary history. Table III summarizes our results in the two groups and a series of new arrivals not included in the experiment.

TABLE III.—*Ascorbic Acid Content of the Blood Plasma of Native Mine Labourers*

	No. Tested	Mean Value Obtained	Range Observed (mg. Ascorbic Acid per 100 c.cm. Blood)
Control Group:			
Just before leaving for home	74	0.230	0.15–0.40
Hospital cases, but excluding cases of scurvy	51	0.234	0.12–0.39
Test Group:			
Just before leaving for home	86	0.252	0.14–0.48
Hospital cases, but excluding case of scurvy	57	0.241	0.13–0.53
*Cases of scurvy**	17	0.174	0.10–0.50
Natives just arrived from their kraals	43	0.185	0.10–0.63

* Including a few cases not in the experiment.

The extremely low values almost invariably obtained will at once be noted. Thus the mean value of 160 natives who had completed their contracts and were returning home was only 0.24 mg. Many of these natives had never even attended hospital during their six or seven months' stay at the mine, and were in excellent health when subjected to their final medical examination. *There was also only an insignificant difference between the values obtained for those receiving the daily ration of 40 mg. of ascorbic acid and those on the usual diet.* It was only after repeated observation that we could bring ourselves to accept this most unexpected finding. While a slightly lower mean value was obtained for the seventeen cases of scurvy, it will be noticed that there was little difference in the range observed.

Intravenous Ascorbic Acid Test.—This test, which was described in 1937 by Wright, Lilienfeld, and MacLenathen and in 1938 by Portnoy and Wilkinson, consists in injecting 1,000 mg. of ascorbic acid intravenously and then measuring

the amount excreted in the urine during the ensuing six hours. Without going into details it may be said that the test was carried out on eighteen men, eleven of whom were healthy individuals from either group and the remaining seven actually having scurvy. Although the latter excreted slightly less vitamin over the six-hour period, our experience in this somewhat limited series of extreme cases did not suggest that the test could be relied on for use with native mine labourers, who, as we have already indicated, even when in apparently robust health are so highly "unsaturated" in respect to vitamin C. This test has been criticized on the grounds that the injection of so large a quantity of vitamin at one time may give rise to a temporary excretion in spite of the fact that the tissues are heavily depleted of ascorbic acid.

Dental Findings

The original intention had been to examine a large number of natives from each group both at the beginning and at the close of the experimental period and so study the effect of a prolonged period on the two diets. Unfortunately circumstances made it impossible to carry out this programme in its entirety. However, a number of individuals, chosen at random and without the observers knowing to which group they belonged, were carefully studied. Many points of dental interest emerged, and are to be reported elsewhere; for our present purpose it will be sufficient to give our findings for the classifications "healthy" and "unhealthy." Healthy gums were defined as those entirely free from any clinical signs of inflammation. The results are given in Table IV.

TABLE IV.—*Comparison of Gum Conditions in Natives from the Control and Test Groups*

	No. Examined	Classified as Healthy	Percentage Healthy
Control group	159	115	72.3
Test group*	64	45	70.3

* Mean period on orange-juice concentrate at time of observation, 4.4 months.

It will be seen that in spite of the low amount of ascorbic acid in the diet of the control group and the highly depleted state of their reserves, suggested by the values obtained for the blood ascorbic acid test, the majority possessed healthy gums, and there was no significant difference between the condition of the gums in the two groups. Such results are in striking contrast to those reported for Europeans in a similar state of depletion—for example, by Weisberger, Young, and Morse (1938), Kramer (1937), and Roff and Glazebrook (1940). When the cases examined were separated into two age groups, 16–29 and 30–48 years, it was found that the percentage of healthy gums, as might be expected, was a little higher in the lower age group.

In seventy-eight cases the amount of ascorbic acid in the blood plasma was determined at the same time as the dental examination was made. The values obtained ranged from 0.10 to 0.38 mg. per 100 c.cm., the mean value being 0.22 mg. Forty-seven of these individuals were classified as possessing healthy gums. The lowest value noted for an individual with healthy gums was 0.12 mg. Among the cases in which the gums were considered to be unhealthy were four that were slightly suggestive of an early scurvy. Only one of these developed other symptoms of scurvy at a later stage of the experiment. The actual condition of the gums in individuals who suffered from clinical scurvy was also of considerable interest, for it was obvious that the picture was not one of profuse stomatitis but was rather localized to certain areas, the remainder of the gums often being apparently quite unaffected. It appeared unlikely that a more intensive study of the gums could be used for the detection of scurvy in its early stages; in other words, we have so far failed to find any indication of an intermediate stage between the healthy and the scorbutic gum in the native.

Effect on Physical Efficiency

In order to see whether the additional ration of ascorbic acid had improved physical efficiency natives chosen at random from each group were subjected to three standard performance tests—namely, putting the shot, sprinting 100 yards, and running one mile. The above three tests were chosen with a view to analysing the complex factor "physical efficiency" into its three main components—strength, skill, and endurance.

Putting the Shot.—Using a 16-lb. shot, this test was performed on sixty-one natives from the test group and 107 from the control group. No significant difference was observed between the performance in the two groups. It may be said that the general standard of efficiency shown in this test was poor, since none of the candidates achieved a throw of thirty feet, which is reached by a considerable number of untrained healthy adult Europeans.

Hundred Yards Sprint.—One hundred and four natives from the test and 130 from the control group were compared. Again no significant differences were revealed by this test, which may be considered capable of giving an insight into the co-ordinative faculties of the individuals. Considering the conditions under which the tests were conducted, and particularly the entire lack of athletic knowledge of the native runners, we adjudged the running time to be good.

Mile Race.—The running times of sixty-one natives from the test and 108 from the control group were compared. No statistical significance could be attached to the differences noted. As this test roughly indicates the candidates' power of endurance the negative result is of great physiological interest. The general standard of performance in this test, if compared with results obtained under similar circumstances for untrained Europeans, we regarded as fair.

The significance of the uniformly negative results obtained in this study can only be grasped when it is realized that the method readily demonstrates noteworthy differences when applied to other factors, such as age, weight, race, sex, puberty, and economic environment. Indeed, in the shot-put test the well-known correlation between performance and body weight was demonstrated on our experimental material.

Vitamin C Reserves in the Liver

Mention may be made here of previously unpublished work carried out by Levy and Fox in 1936 on the vitamin C content of European and native livers. A series of livers obtained from healthy European and native accident cases were analysed for vitamin C as soon as possible after death. They were sent to us as those of moderately nourished to well-nourished individuals. The average amount of reducing substance, probably mainly vitamin C, was estimated to be as follows:

TABLE V.—*Total Amount of Reducing Substance in the Livers of Well-nourished European and Native Subjects (90 Cases)*

	No. of Cases Examined	Mean Value as mg. Ascorbic Acid per Liver	Observed Range (mg.)
Europeans..	26	320	150–640
Town natives	32	158	48–200
Mine natives	32	115	46–210

The difference between the European and native livers in the amount of vitamin C stored is most noticeable. The difference between that of the mine natives and that of the town natives may perhaps be attributed to the fact that the latter group included a number of domestic servants, such as cook-boys, etc., who may have had a more varied diet. Assuming a daily requirement of 15 mg. ascorbic acid, these reserves, if they may be regarded as such, would have lasted for only twenty-one, fifteen, and eight days respectively.

Scurvy in the Witwatersrand Gold Mines

In addition to the foregoing, information was collected concerning the cases of scurvy that have occurred since 1935 on the fifty-six mines that are members of the Transvaal Chamber of Mines. This information included the monthly incidence, the interval between joining the mine and admission to hospital, the relation between the nature of the work done and the liability to contract the disease, and the incidence amongst the various tribes. Two conclusions of more particular interest may be referred to here.

Nature of Employment and Liability to Contract Scurvy.—The actual occupation previous to contracting scurvy was classified as hard, medium, or light work, and the relative frequency in each category was found to be as in Table VI.

TABLE VI.—*Relative Frequency of Scurvy among Natives engaged in Different Types of Work*

Type of Work before Admission to Hospital	Estimated No. of Natives annually Employed in Each Grade*	Distribution expected if Incidence Uniform	Distribution found	Relative Frequency of Cases per 10,000 Natives
Hard work ..	206,083	774	768	37.3
Medium work ..	50,009	188	246	49.2
Light work ..	48,087	181	129	26.8
Totals ..	304,179	1,143	1,143	37.5

* Actual distribution not available. Estimate based on data for 1937 for one mining group employing about one-third of total labour force.

It will be seen that the hard workers have almost exactly the incidence of scurvy expected from the overall distribution, while medium workers have significantly more and light workers significantly less. It would therefore appear that the incidence of the disease is not influenced by the severity of the work undertaken. The work classified as hard includes the shovelling of rock and the pushing of trams, and is of a really strenuous nature.

Nature of Employment and Time taken to Contract Scurvy.—The mean time taken to contract scurvy by natives engaged in each type of work was also determined, and was found to be 6.59, 7.26, and 7.13 months respectively. The similarity of these three intervals lends no support to the view that scurvy develops more quickly when a native is engaged on hard work.

These conclusions as to scurvy are obviously of particular interest when considered in conjunction with the results of the physical efficiency tests.

Discussion

When considering the negative results shown by this experiment it is well to remember that they were obtained by varying the intake of a single constituent of the diet. However, a diet functions as a whole, and it is not suggested that the particular diet employed was fully adequate in respect to all its other constituents. Hence it is conceivable that some other deficiency or deficiencies may have had a limiting effect upon the response obtained with the additional ration of ascorbic acid.

Secondly, it must be remembered that these experiments have been made on Bantu subjects, and the possibility that they differ from Europeans in their requirements of the antiscorbutic vitamin cannot altogether be excluded, more especially when it is remembered that their customary diet is known to be deficient in this constituent; the peculiar results obtained with the capillary resistance test will also be recalled.

Nevertheless after making a fairly thorough and critical examination of the literature we have come to the conclusion that our own results find support from the evidence presented by other investigators during the last few years. A few examples may be mentioned. Thus Kellie and Zilva (1939) as a result of careful laboratory experiments concluded that a daily intake of 15 mg. of ascorbic acid would be sufficient not only to protect from scurvy but to maintain normal individuals in good health. Again, an examination of the numerous papers in which the amount of ascorbic acid in the blood has been determined reveals the fact that a considerable number of apparently healthy individuals have given values as low as those found by us for Bantu mine labourers. Since such values fall below the usual figures and were often known to be associated with a low intake of vitamin in the diet they have been automatically classified as "inadequate" or "subscorbutic," although there does not appear to have been any evidence that such individuals were any the worse for their low reserves. Then with regard to the relation of vitamin C to natural resistance and immunity, while it is true that much interesting work has been done, those who have reviewed the subject recently remain unconvinced. Thus Abt and Farmer (1938) remark that the whole field "is but in its infancy, and much more experimental and clinical evidence must be accumulated before any definite claims seem justifiable." Dagulf (1939), who was more particularly concerned with tuberculosis, takes the same view, and goes so far as to say that it has not yet been established that there is any connexion between vitamin C and that disease.

The histological and clinical evidence regarding the importance of vitamin C in relation to the healing of wounds and fractures is more impressive, and in considering our negative results it must be remembered that the test-group patients did not receive additional vitamin C after they reached hospital. In this connexion, however, it may be mentioned that, although it is evident that natives as a class must often be in a most depleted state in respect to vitamin C, their general response to surgical measures and their rate of recovery are usually regarded as comparing favourably with those of Europeans, rather than otherwise.

Although it seems to be rather generally assumed that the requirements of vitamin C are increased during strenuous exercise, there is really very little reliable experimental evidence to support such a contention. The matter is discussed in an excellent paper by Rietschel and Mensching (1939). Mensching describes how fit and active he was after 100 days on a diet very deficient in vitamin C and with blood ascorbic acid values that had fallen so low that he could no longer measure them. Moreover, the absence or surprisingly low incidence of scurvy among communities whose diet is highly deficient in the anti-scorbutic factor has often been commented on. A similar anomaly regarding the health of Arctic explorers has been noticed by Stefansson (1939).

The precarious nature of such minimal supplies of the vitamin is obvious enough; nevertheless it is surely unscientific to assume that general health must be greatly improved when larger amounts are made available. As a result of their work Rietschel and Mensching reach the conclusion that the healthy individual's actual requirements of vitamin C are small and that this substance most probably behaves as a metabolic catalyser, being alternately oxidized and again reduced. They also put forward the suggestion that when supplies are diminished not only is excretion also lowered but perhaps substances other than the vitamin can be utilized to some extent.

Conclusions

1. Taken as a whole the evidence presented in this study shows that the native mine labourer possesses considerable powers of adjustment to a diet low in anti-

scorbutic vitamin—in fact, his daily requirement, even when engaged in strenuous physical exercise, seems to be very small indeed.

2. A net daily intake of about 15 mg. of ascorbic acid, perhaps even less, can evidently protect the majority of such individuals from scurvy. Four independent lines of investigation failed to demonstrate that further additions to the diet lead to any noticeable improvement in general health. Thus such an addition did not diminish the incidence of infectious diseases, nor did it improve dental health or physical efficiency. Alternatively, scurvy was not found to occur more frequently or more quickly amongst mine labourers engaged in the more strenuous occupations.

3. However, the precarious nature of such minimal rations in respect to the production of scurvy is also well illustrated by this experiment, since a number of cases occurred in the untreated group, whilst the disease was virtually abolished in those receiving the additional protection.

4. Attention is drawn to the singular lack of correlation obtained between the various tests available for detecting vitamin C deficiency and the clinical findings. While these tests may be useful in so far as they draw attention to the existence of low reserves of the vitamin, in our hands they failed entirely to distinguish those individuals who were any the worse for such low reserves. We are in complete agreement with Zilva and others when they deprecate the use of terms such as "subscorbutic" or "latent scurvy" for states of vitamin C depletion which have not as yet been shown to have any adverse effect upon the health or efficiency of the individual concerned.

Finally, we should like to make it quite clear that our object in drawing attention to these observations is not to minimize the importance of this vitamin in human nutrition or to advocate the use of diets that are only just capable of protecting the consumer against scurvy. We would emphasize, however, that much still remains to be learnt about the part played by ascorbic acid in the general metabolism and that many of the claims advanced cannot as yet be regarded as fully established. In the meantime the assertions so confidently made by uncritical observers should be accepted with considerable reserve.

Summary

Two groups, each of 950 mine labourers, chosen so as to be as comparable as possible in respect to tribe, age, physical condition, and occupation, were subjected to an experimental test. One group remained on the usual mine diet, which was estimated to contain from about 12 to 25 mg. of ascorbic acid, while to the other an additional daily ration of 40 mg. of ascorbic acid was administered in the form of a standardized orange-juice concentrate. The experiment was continued for seven months, and the behaviour of the two groups was studied in various ways.

Both groups maintained a high level of general health, as will be gathered from the fact that, excluding shifts lost by reason of accidents, over 99.1 per cent. of the possible shifts were actually worked, even by the untreated group.

Twelve cases of scurvy occurred in the untreated group and one mild case in the group receiving the additional ration of ascorbic acid.

Otherwise no significant difference could be detected in the behaviour of the two groups. Thus the weight changes were almost identical, and there was no evidence that the general health, physical efficiency, and resistance to infectious or dental diseases had been increased. The additional ration of vitamin C was discontinued as soon as a patient reached hospital, but there was no indication that the change in the previous diet had improved the rate of recovery from disease, or that the rate of healing of wounds and fractures had been accelerated. Nearly three-quarters of the individuals examined by the dental surgeon in both groups were found to possess healthy gums.

Numerous tests showed that the plasma ascorbic acid values were extremely low, even in apparently healthy individuals engaged in hard work. These low values were not significantly raised by the additional daily ration of ascorbic acid.

Data concerning over 1,000 cases of scurvy occurring in the Witwatersrand gold mines over the past few years were also carefully examined from various angles. Among other conclusions it may be mentioned that there was no evidence to suggest that natives engaged on the more strenuous types of work developed scurvy either more often or more quickly than those whose metabolic resources were less severely taxed.

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SURGICAL TREATMENT OF AIR RAID CASUALTIES

WITH A REVIEW OF 12 CASES

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This report is given in a preliminary stage because of several important points brought out regarding the initial treatment of air raid casualties. The twelve cases reviewed were dealt with by one team, consisting of two surgeons, two anaesthetists, one sister, and three nurses. The injuries were caused by high-explosive bombs and many of them were multiple, there being six compound fractures, and all except three of the cases were severe. Head, chest, and abdominal wounds are not included. There have been no deaths and only one amputation. The time taken over all the operations was four hours, which averages out at forty minutes a case. With further organization this could no doubt be shortened. Two tables were used in the same theatre.

A separate history of each case is given in some detail, and these are followed by a short discussion on problems and innovations in wound treatment. There are, however, many points in the treatment which have been used as a routine and which will be detailed now to save repetition.

Routine Treatment

Shock.—The patients were put to bed with hot-water bottles and blankets, and the foot of the bed raised; morphine (if not already administered) and 2,000 units of tetanus antitoxic serum were given. One of the surgeons then went the rounds of the ward, making a list for operation. He saw that cases with tourniquets were dealt with fairly quickly and cases in the extreme stages of shock were left until they recovered. Severe injuries with a moderate degree of shock were operated on as soon as possible. As there were many in this last category the time element was important. Plasma transfusions were given to the more severely shocked cases.

The Operation.—All the patients received a general anaesthetic, ether being given by the open method. Each patient's clothes were cut off and the wound exposed; a sterile swab was then placed over the wound itself and the surrounding skin cleansed with ether soap and shaved. The surgeon now scrubbed up, removed any gross contamination from the wound with forceps, and applied first to the wound and then to the surrounding skin a solution of dettol 50% in spirit coloured with methylene-blue. The skin edges were excised and all the deeper structures that were coloured blue and were readily accessible. Deep perforating tracks which could not be opened up because of causing further injury to important structures were carefully explored for pieces of bomb casing; the whole wound, and especially these tracks, were then packed with sulphanilamide powder.

After-treatment.—Upon returning the patient to the ward the treatment for shock was continued. Sulphanilamide was given by mouth (2 tablets—15 grains—every four hours) as soon as the patients could take it, and was continued for twenty-four to forty-eight hours, according to the temperature chart. Wound dressing was avoided as far as possible, the main indication for inspection of the wound being a slight rise in temperature accompanied by a rapid rise in pulse rate. A musty smell from the dressing is an additional factor arousing suspicion of anaerobic infection.

Case Histories

Case 1: Laceration of Lower End of Forearm and Compound Comminuted Fracture of Ulna.—A female aged 18. A fairly severe degree of shock was present; the whole of the ulnar half of the forearm had been blown away a few inches above the right wrist, the bone being shattered for two inches and the nerve, artery, tendons, and muscles severed. There was also a superficial laceration of the right leg. The wound was excised in the routine way and a closed plaster applied from the axilla to the metacarpal heads. The raw surface of the wound was separated from the plaster by a layer of vaselin gauze and sterile wool in that order. Convalescence was very quiet and comfortable. A radiograph taken on the second day showed a satisfactory position, although there was a large gap between the head of the ulna and the rest of the shaft. There were some viable fragments filling this gap, and it seemed highly probable that bony union would take place. On the fifth day the patient got up for the first time, and immediately an attack of "blue asphyxia" occurred; this lasted for a few minutes, after which there was full recovery. On the seventh day no undesirable symptoms followed a second attempt to get up. Similar attacks have occurred in cases not in this series, and it is possible that they may be the sequel to the effects of blast on the lungs. These organs on post-mortem examination may show multiple points of interstitial haemorrhage, presumably the result of the concussion.

Case 2: Perforating Wound of Forearm with Compound Fracture of Radius.—A man aged 22. This patient was fairly severely shocked and had sustained a perforating wound of the left forearm, the bomb splinter having entered on the outer side, smashed up a section of the radius, and then made its exit on the inner side. He also had a small penetrating wound of the left cheek and scalp. Wound excision was carried out in the routine manner, vaselin gauze and a thin layer of wool being applied over the wounds. The fracture was then fixed by holding the hand in ulnar adduction so as to exert extension on the radius, while a closed plaster was applied from the axilla to the metacarpal heads. The next day the temperature was 99° F. and pulse 80. The arm was comfortable. On the second day the temperature had completely settled; the arm was radiographed for the first time, and the film showed very good reduction. The plaster will probably be left undisturbed until the fracture has united.

Case 3: Perforating Wound of Sacral Region with Compound Fracture of Sacrum; Perforating Wound of Elbow with Compound Fracture of Radius.—A man aged 36. This patient was very severely shocked and was suffering from two perforating wounds. That over his sacrum had an exit on the outer side of the left hip and there was some inability to move the left leg. The left elbow had an entry wound in the region of the head of the radius and an exit wound on the inner side of the upper arm; both radial and ulnar nerves were paralysed. Operation was delayed for over three hours, during which time plasma was given as well as routine anti-shock treatment. At the elbow the radial nerve could not be found, the track of the projectile having passed right across its path. The ulnar nerve was found; it appeared bruised, but was anatomically intact. The arm was put up in closed plaster. The buttock wound was excised and explored: part of the lateral mass of the sacrum was blown away, but the hip-joint was intact. Convalescence was very disturbed, the temperature rising to 101° F. and the pulse to 120 for the first three days. Windows were cut out over the elbow wounds on the second day and a thin reddish-brown fluid escaped, which showed *Cl. welchii* on examination. This, together with the general reaction, suggested the presence of gas-gangrene toxaemia, although there was no spreading area of crepitation and swelling around the wounds. In addition to the routine administration of sulphanilamide by mouth, 16,000 units of anti-gas-gangrene serum were given four-hourly for four doses. After the third day the pulse gradually settled and no drastic surgical intervention was necessary.

Case 4: Lacerated Wound of Upper Arm; Comminuted Fracture of Humerus.—A woman aged 27. The patient was extremely shocked; the local damage was extensive, the left arm being severed for over three-quarters of its substance and the humerus fragmented for the greater part of its length. The neuro-vascular bundle on the inner side of the arm and a narrow strip of skin were the only intact structures. Operation was delayed for two hours and a plasma transfusion started. As the humeral shaft was shattered at a higher level than the soft-tissue lesion and for a considerable proportion of its length, and as the soft-tissue lesion was very extensive, it was reluctantly agreed that amputation had to be performed. This was carried out at the site of the lesion, all the fragments of bone being removed. This fortunately left the proximal fragment well above the level of the skin flap, thus avoiding the formation of a conical stump. The next day the temperature was 100° F. and pulse 100; these did not settle for three days. The wound was dressed on the fifth day, when it appeared clean and culture was negative. Reamputation will probably not be required.

Case 5: Perforating Wound of Leg, with Compound Comminuted Fracture of Tibia and Fibula.—This patient, a man aged 61, was severely shocked and was suffering from a perforating wound of the left leg. The point of entry of the projectile, about as round as a sixpence, was on the outer side of the upper third of the leg, and the exit wound, 2 in. by 1 in. in size, was almost opposite, on the inner side of the leg. The track joining the two contained fragmented pieces of bone and torn muscles, at least three inches of the tibia being comminuted. In addition to the routine treatment for shock a tourniquet had been applied, so operation was not delayed. As soon as the patient was anaesthetized the tourniquet was removed, but no undue bleeding occurred. The wounds were treated in the usual manner. The fracture was then fixed by placing Steinmann pins in the tuberosity of the tibia and os calcis, and then clamping these pins to the side bars of a Thomas splint (McKee, 1940). Radiographs were not taken until the second day. Plasma was given on return to ward. Convalescence was unsettled to start with. The temperature was 100° F. and the pulse 80, but these soon subsided. On the fourth day a thin reddish-brown discharge with some bubbles in it could be expressed from the track. This had an odour of the mortuary associated with gas gangrene, and on smear and culture in sterile milk *Cl. welchii* was found. In view of the restricted local reaction and early subsidence of the general reaction the presence of gas gangrene was disregarded, and on the seventh day a snug-fitting plaster, skin-tight, was applied up to the region of the adductors. Both pins were then removed, and a window was cut out over the wound in order that the result of the *Cl. welchii* infection might be watched. There has been no

spread beyond the wound track, so the window will soon be covered in.

Case 6: Penetrating Wound of Left Ankle-joint.—A man aged 29. A moderate degree of shock was present in this case, in which there was a small penetrating wound in the inner side of the left foot just below the medial malleolus. The skin edges were excised and the track explored in the routine manner. A closed plaster was applied from toes to knee. Convalescence was undisturbed except for an initial rise of temperature to 100° F. on the first day. A radiograph on the second day showed two small fragments of bomb embedded in the substance of the os calcis. These will be removed later if they cause symptoms.

Case 7: Penetrating Wounds of Arm and Calf.—This patient, a man aged 25, was only moderately shocked, and was suffering from multiple wounds of the left upper arm and right calf. The wounds were dealt with by the usual routine, there being two large ones in the arm and six small ones in the leg. Some fragments of metal were removed, but a subsequent radiograph showed a number—some pieces very small—remaining, one of these being actually buried in the humerus. For the first few days the temperature was 99°–100° F., but this settled after the third day. All the wounds were healing well after the first week. Some fragments may require removal later if they give rise to symptoms.

Case 8: Penetrating Wounds of Right Arm and Forearm.—A man aged 42. This patient was suffering from wounds of the right upper arm and the right forearm and a laceration involving the muscles of the left forearm, but was only moderately shocked. The wounds were excised; in the right forearm a piece of metal was felt beneath the skin on the opposite side of the limb. This was removed through a counter-incision. Convalescence was completely comfortable and undisturbed.

Case 9: Small Penetrating Wounds.—A man aged 36. Only a slight degree of shock was present in this case. There were small penetrating wounds full of blackened debris on the left forearm and scalp, and from them small fragments of metal were removed. Convalescence was uneventful.

Case 10: Small Penetrating Wounds.—A man aged 31. The degree of shock was very slight in this case. There were some small penetrating wounds of the right axilla, left forearm, and left ankle region. The routine wound treatment was carried out, small pieces of metal being removed together with much blackened debris. The ankle-joint had not been penetrated. Convalescence was uneventful; there was no reaction.

Case 11: Perforating Wound of Buttock.—This patient, a man aged 39, was not badly shocked. He had a penetrating wound in the left buttock the size of a shilling and a small perforating wound in the region of the ankle which did not involve the joint. Operation consisted of the usual wound toilet and excision of the skin edges. The buttock wound was the entrance to a large cavity beneath the gluteus maximus, with passages leading in many directions. The cavity was opened up and the passages explored, but no metal fragments were found. The next day the temperature was 99° F. and the pulse 80; on the third day these had completely settled. A radiograph showed a metal fragment in the upper part of the thigh; this will probably be removed later. After a week no constitutional symptoms were present and the wound was healing well.

Case 12: Multiple Small Penetrating Wounds of Thighs.—A man aged 40. This patient was only slightly shocked. There were some twenty to thirty small penetrating wounds of both thighs, varying from 0.25 to 1.5 cm. in size. The openings of these wounds were black, as though charred. All these little wounds were excised; they contained grit, and in some of them fragments of glass were found. Convalescence was uninterrupted and undisturbed.

Points of Special Interest

Surgical Supervision of Cases.—There should be unity of control and continuity of treatment of each case so far as is possible, and while the patients remain in the one hospital this should not be difficult to organize. Each surgeon should have in his charge a unit of beds, and should examine, operate on, and attend to the after-care of the cases.

Use of the Tourniquet.—The tourniquet had been applied as a first-aid measure in only one case, but that case did not require it. When the patient arrives in the ward the surgeon should observe the result of loosening the tourniquet, and unless the bleeding indicates that a main artery has been torn the tourniquet should be removed and the haemorrhage controlled by direct pressure with a pad and bandage.

Removal of Metallic Fragments.—A portable *x*-ray apparatus was not available for use with these cases, but would have been helpful in enabling the foreign bodies to be located. Films in two planes could be taken in the ward while the patients are being treated for shock; they would then be available as wet films at the operation. Extensive and prolonged operations for the removal of metallic fragments are not justified at the initial stage, but every effort should be made to remove those pieces which are readily accessible.

Treatment of Compound Fractures.—All the compound fractures of the upper limb were treated by the closed-plaster technique, except one in which severe soft-tissue damage necessitated amputation. In the case of the lower limb, however, there is a definite danger of gas gangrene occurring, and for this reason it is better to immobilize these fractures in such a way that the whole limb (and wound as well if thought necessary) is open to inspection (McKee, 1940). If this can be done without radiographic control it is a decided advantage in an emergency. After a week or so, when this danger has diminished, a snug-fitting plaster cast can be applied and correct alignment obtained without disturbing the fracture unduly and without an anaesthetic.

Type of Wound.—The wounds were of the penetrating or perforating variety and appeared to be caused by relatively small pieces of bomb casing, the term "perforating" being reserved for cases in which there was an entry-and-exit wound. The exit wound, if present, was, as is usual in these injuries, larger than the entrance wound, especially if a bone had been shattered *en route*. The edges and tracks were often blackened as though burnt, and some of the patients who had been struck by multiple splinters appeared as though peppered with little black spots.

Distribution of Wounds.—The majority of the wounds in this series were above the hips (two wounds above the hip to one below), which suggests one very important precaution—that is, to lie flat as soon as the scream of a falling bomb is heard.

Use of Sulphanilamide.—It is difficult at present to supply exact statistics by which to gauge the effectiveness of this procedure. Infection was definitely less in the cases here reported than it was in many other similar cases treated in the same hospital in which sulphanilamide was not used. Infection, however, does not appear to be particularly virulent in these bomb injuries unless the wounds are in dirty regions such as the buttock or leg. What was impressive in this series was the way proved *Cl. welchii* infection remained confined to the wound tracks. In view of past experience of compound fractures and gas gangrene this control of infection appears to be due to the administration of the sulphanilamide. In the case reported with severe toxaemia (Case 3) the combination of serum (*perfringens* antitoxin) and sulphanilamide enabled recovery to take place without any mutilating surgical procedures having to be adopted.

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FRACTURES OF SHAFT OF TIBIA

A METHOD OF REDUCTION

BY

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During the last decade the treatment of fractures has undergone radical changes. Among the many recent advances that have resulted from increased interest and improved methods the raising of the standard of primary reduction has been conspicuous. The number of patients referred to orthopaedic departments with painful flat-foot or irreparable arthritic change in the ankle-, tarsal, or even knee-joints, the result of faulty joint mechanics following fracture of the tibia treated ten to thirty years previously, amply justifies the present demand for a higher standard of anatomical reduction. Both simple and compound fractures of the tibia have, as a result of the mechanization of industry and the ever-growing volume of road transport, become an increasingly common problem of traumatic surgery, and the black-out has brought about many such injuries. Many more will also be caused by enemy action.

The ideal treatment of fractures of the shaft of the tibia is manual correction of the deformity and the application of a skin-tight cast incorporating the knee-joint. This treatment, however, is impossible when the fracture is oblique and the fragments are angled and overriding. Most authorities agree that such fractures require skeletal traction in order to attain and, what is more difficult, maintain anatomical reduction.

The method of reduction described here was evolved about two years ago, after considerable experience of the method and apparatus of both Böhler and Watson Jones. Two 4-mm. stainless steel Steinmann pins are used—one through the os calcis or the tibial crest below the site of fracture, depending on the individual preference of the operator, and one through the tibia in the region of the tibial tuberosity. The second pin, above the site of fracture, not only ensures the maintenance of reduction but prevents the possibility of rotary movement of the upper fragment on the fixed lower fragment—probably the commonest cause of non-union.

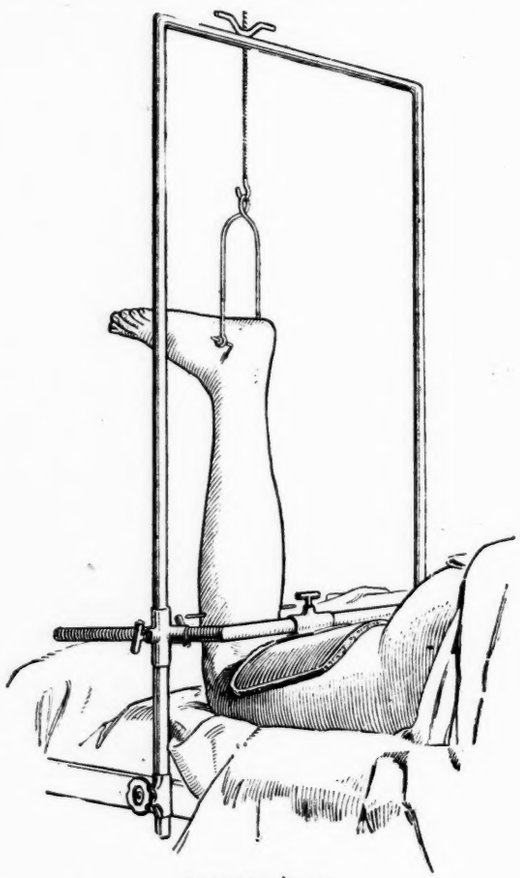
The Apparatus and the Method of Treatment

The apparatus, illustrated here in its original form, consists of a framework of gas-piping which fits into the sockets for the lithotomy supports, a standard fitting on all modern operating tables. A hook attached to a threaded rod and controlled by a wing-nut secures traction from the horizontal bar. A further frame of similar tubing controls a metal plate lined with sponge rubber and shaped to fit the posterior aspect of the thigh. This frame is adjustable in the horizontal and vertical planes. This appliance has been used on five different operating tables, but it will not fit all tables. It has been constructed in a more portable form capable of being dismantled into six individual lengths of tubing. This type (made by A. Young and Son, Ltd., 57–61, Forrest Road, Edinburgh) may be adjusted to fit all tables.

After medication with morphine and hyoscine the patient is anaesthetized with gas-and-oxygen. The two stainless steel pins are drilled or driven into position, with the necessary aseptic precautions, and a Böhler-type stirrup is attached to the lower pin. The patient is then turned to the prone position and the apparatus fixed and carefully adjusted. If the fracture is compound the soap-and-water preparation of the skin is carried out before inserting the pins, but the débridement and reduction are performed with the limb in the vertical position.

Reduction is secured by a combination of traction and adjustment of the horizontal frame and thigh clamp. When the length and alignment of the limb appear normal the fracture is screened and the position of the fragments checked. The use of a portable *x*-ray plant in conjunction with this apparatus is a matter of extreme simplicity, and the operative access to compound fractures will be found to present no difficulties.

Before applying plaster to the limb the operator should assure himself, first, that the fracture is not over-reduced—a fault common to all forms of skeletal traction; and,



Apparatus in use.

secondly, what pressure will be required on the antero-medial aspect of the tibia to reproduce the normal tibial bowing. Neglect of the latter point leads inevitably to traumatic flat-foot and arthritis of the ankle-joint, in spite of apparent good alignment of the fragments.

After-treatment

The patient is returned to bed and the limb placed on a Braun splint. The foot of the bed is raised. When the reactionary swelling has subsided the plaster case is completed to include the knee-joint, which is fixed in a few degrees of flexion.

Originally an attempt was made to retain mobility at the knee-joint during the ambulatory stage of treatment by using a patten and crutches. Some patients, however, complained of pain and swelling at the upper end of the tibia, and it was found that the movement of the skin due to flexion and extension at the knee increases the tendency to infection of the pin track. The short plaster was therefore abandoned and the knee-joint immobilized.

When the radiological evidence of union is considered sufficient to make the possibility of redisplacement unlikely the plaster is removed and the pins extracted. A further skin-tight plaster case is retained until union is complete.

Summary

A method of reduction of fractures of the shaft of the tibia is described. It is claimed that the vertical position of the limb above the table allows of good operative access, with ease of radiographic control; that posterior angulation of the fragments due to gravity is eliminated; and that the plaster technique is simplified.

FULMINATING SONNE DYSENTERY

REPORT OF TWO CASES

BY

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Although Sonne dysentery is a common illness in children throughout the British Isles and at any season of the year, the mortality rate is low and fulminant cases are rare. The following two cases may therefore be of interest.

Case I

A baby girl aged 20 months was admitted to the Preston Royal Infirmary at 10.40 a.m. on September 3, 1939, having been convulsed in the train from Manchester. She had been roused at 6 a.m., but took no breakfast, appearing upset at her early awakening.

On admission there was drowsiness, fever (temperature 100.4°), tachycardia, and tachypnoea; but apart from coarse rhonchi in the lungs physical examination was negative. Convulsions occurred at 3.30 and 7.30 p.m. The cerebrospinal fluid was at a pressure of 250 mm. of water, but was normal to the naked eye and as regards cell count, globulin, protein, and chloride content, gold curve, and Wassermann test. Only one stool was passed, and that was mucoid and tinged with blood. Death occurred at 1.55 a.m. on September 4, about seventeen hours after the onset of symptoms.

At necropsy, nine and a half hours after death, the mucosa of the colon was thickened and pink, the Peyer's patches of the lowest yard of ileum were red, and there was congestion of the pyloric mucosa and of the lungs and pink hyperaemia of the brain. The liver substance contained patchy yellow areas. Sonne's bacillus was isolated from the colon contents, and microscopically the liver lobules showed central degeneration.

Case II

A girl aged 4 years was admitted to the Preston Royal Infirmary at 7.45 p.m. on October 8, 1939, after five hours of illness characterized by headache, vomiting, and convulsions. There was fever, tachycardia, and tachypnoea; and frequent convulsions occurred, but only one stool was passed before death at 12.40 p.m. on October 9. The cerebrospinal fluid was crystal-clear and normal in all respects.

At necropsy, three hours after death, the only abnormal features were (*a*) in the colon, the contents of which were milky and mucoid and whose mucosa was generally congested (especially immediately round the ileo-caecal valve and orifice); and (*b*) in the liver, the cut surface of which was markedly pale. Sonne's bacillus was obtained in almost pure growth from the contents of the ileum, caecum, and colon, and its identity was confirmed by Dr. Scott of the Ministry of Health Laboratory. Microscopically the liver lobules showed fatty degeneration of the central zones.

The brain was submitted for histological examination to Dr. Pollak of the Manchester University Surgical Research Institute, and he reported that a toxic reaction was present, similar to that found in other infective diseases and characterized by a "homogenization" of the cells of the post-central and pre-central gyri, in the medulla oblongata, and in the dentate nucleus of the cerebellum.

Literature

Pickles (1932), MacGill and Downie (1932), and Laws (1936) have recorded outbreaks of over 100 cases without any deaths. None of the seven infantile deaths in Glasgow's first recorded outbreak (Hay, 1930) can be described as fulminant, as the interval between the onset of diarrhoea and death varied from five days (two cases) to twenty-four days (two cases). Mita (1921) does not make it clear how many of his seventy-three cases were fulminant. He examined post mortem three subjects of "paradysentery" who had died thirty-six to sixty hours from the onset of illness, and found that the intestinal changes resembled but were slighter than those found in "true" dysentery. He comments on the similarity of the fulminant "paradysentery" case to the fulminant "true" dysentery case, but adds strangely: "However, such fulminating symptoms are not infrequently present after orthopaedic operations for congenital malformations . . . and sometimes such fulminating symptoms develop without the presence of any pathogenic organism." In Glasgow's first large outbreak there were six deaths, all, however, in elderly persons who had been suffering from pre-existing illnesses (Bloch, 1938).

Wiseman (1927) describes the case of a young man who collapsed and died one morning after a night of diarrhoea and being "out of sorts" the previous day. At the post-mortem examination Sonne's organism was isolated from the lower part of the colon, the mucosa of which was intensely red. Fromme (1935) met, over a short space of time, six cases in children that resembled those presented here; five were fatal, all in less than three days, and two of these were proved at necropsy. He also describes a previous similar case which, although proved at necropsy, was thought to be complicated by an overdose of calomel.

Fromme stresses the fact that clinically these cases show a severe intoxication, with the intestinal symptoms in the background. All his cases, however, had some degree of diarrhoea. Clayton and Hunter's case (1928) was that of a boy of 11 who died thirty-three and a half hours after an illness characterized by bloody mucoid diarrhoea, vomiting, and unconsciousness; while Howel Evans's (1928) patient died in sixteen and a half hours after a similar illness. The fulminance of Sowden's (1933) two fatal cases (boys of 11 and 13 years who died in less than twenty-four hours) out of thirteen patients might be considered artificial, as it was believed that a girl of 9 harbouring Sonne's bacillus had contaminated the pease-pudding of which all had partaken. Although the five "coroners' cases" described by Harvey (1933), writing on "Dysentery as a Cause of Sudden Death," showed a striking lymphoid hyperplasia around the ileo-caecal valve (see also Case II) bacterial proof was lacking, as Sonne's bacillus was obtained only from a sick relative of one of the patients.

Charles and Warren (1929) saw ten fatal and fulminant out of 191 positive and suspected dysentery cases in Newcastle-upon-Tyne between March, 1928, and June, 1929. Two of these were due to Sonne's bacillus. The post-mortem findings were similar in all—namely, an entero-colitis, with enteritis predominant in most; together with toxic changes in the heart, liver, and kidneys. Charles and Warren underline the sudden onset and the toxic rather than diarrhoeic symptoms, and stress the important part overcrowding plays in propagating the disease.

Discussion

It is clear that cases arise, although rarely and in different parts of the world, in which death rapidly occurs from toxaemia, with little or no diarrhoea, and yet in

which at post-mortem examination the signs of dysentery are found and Sonne's bacillus is isolated from the intestine. Individual susceptibility rather than virulence of organism is the most probable explanation. Clinically the diagnosis has to be made from other acute infections, especially cerebrospinal fever, and poisonings; and, in infants, also from the convulsions of the tetany of rickets. Treatment can hardly be other than symptomatic.

Summary

Two cases are reported of children, aged 20 months and 4 years, who died of toxaemia due to Sonne dysentery in under twenty-four hours; and the few similar cases in the literature are reviewed.

It is a pleasure to acknowledge my indebtedness to the assistant deputy coroner of the County Palatine of Lancaster, Mr. A. L. Ashton, for permission to record the post-mortem findings in the two cases, and to Dr. A. E. Rayner and Dr. R. P. A. Rigg for access to the ward notes; and to thank also Major F. B. Smith for the use of the post-mortem notes in the first case, Dr. E. Pollak for the histological examination of the brain in the second case, Dr. W. F. M. Unger for assistance with translation, Dr. W. M. Scott of the Ministry of Health Laboratory for advice, and Mr. T. J. Shields, librarian to the B.M.A., for help with the references.

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COMPOUND HYPERTONIC SALT IN THE TREATMENT OF SEPTIC WOUNDS

BY

C. J. CELLAN-JONES, M.D., F.R.C.S.Ed.

Five years ago J. C. Lyth contributed an original article (*British Medical Journal*, 1935, **2**, 903) on the value of hypertonic lotions in the treatment of infected wounds. After using his technique in a large and varied group of cases I had no hesitation in accepting the remarkable statistics relating to 1,096 patients which he summarized in the *Lancet* on February 3, 1940. Moreover, I confirm his conclusion that from the point of view of osmosis a 10% solution of sodium sulphate acts more rapidly and efficiently than similar saturations of magnesium sulphate or sodium chloride.

In several instances, however, I have been impressed by the failure of hypertonic lotions to prevent the spread of cellulitis, particularly in toxic patients with extensive wounds. During the past twelve months this finding has led me to combine varying concentrations of acriflavine with the sodium sulphate solution. Thanks very largely to the co-operation of Messrs. Crookes Ltd. I now employ a mixture of sodium sulphate and acriflavine in the form of a fine powder, which I have termed "compound hypertonic salt." By dissolving a measured quantity of the product in warm water a 10% sodium sulphate solution containing 0.1% acriflavine can be made ready for use in a few moments.

I am satisfied in the first place that acriflavine does not interfere in the slightest degree with the mechanical efficiency of the hypertonic sodium sulphate. Secondly, in a concentration of 1:1,000 acriflavine does not harm the tissues or inhibit the activity of leucocytes. The main advantage of this antiseptic dye is that it rapidly infiltrates the wound margins and destroys most types of invading organisms. As a result spreading infections are promptly localized, sloughs separate more rapidly, and granulation and epithelization are stimulated to a far greater extent than by sodium sulphate alone. Although I have only twelve months' experience of compound hypertonic salt, the proved value of the product in recent casualties must excuse the prematurity of this memorandum.

Illustrative Case Histories

The following short case-histories may prove interesting to other practitioners, and in due course I would welcome their observations.

Case 1.—Male casualty aged 38, admitted 10.7.40 with lacerated wound on inner side of ankle, penetrating talonavicular joint. Wound margins and damaged tissues excised, no sutures, cavity packed with compound hypertonic solution, back-splint with foot-piece applied. Re-dressed four-hourly at first, now twice daily. Moderate fever for two days only. To-day, 15.7.40, no evidence of local inflammation, complete absence of pain, wound has granulated almost to surface level.

Case 2.—Male casualty aged 46, admitted with shrapnel wounds of left buttock (operation by Mr. Black); shrapnel removed, wound margins excised, sutured with drainage. Compound hypertonic solution applied on gauze pack twice daily. 15.7.40, wound has healed by first intention and patient is to be discharged to-morrow.

Case 3.—Male aged 59, admitted to hospital five days after onset of acute appendicitis. Temperature 103° F., pulse 130. Abscess in right iliac fossa had ruptured, causing general peritonitis. The appendix was not removed but three large corrugated rubber drains were inserted. At conclusion of operation large gauze soaks (compound hypertonic solution) were applied to the wounds, and this measure was repeated four-hourly. Although a faecal fistula arose and discharged for seven days, all wounds had granulated to skin level in three weeks and healing was complete in one month.

Case 4.—Male aged 29 sustained compound comminuted fractures of tibia and fibula ten days previously. Leg had been encased in "open" plaster and large doses of sulphapyridine (M & B 693) administered. Temperature varied between 104° and 101° F. Bone was protruding, the wounds were very foul, and after removing the plaster a diffuse cellulitis was found involving the tissues from the ankle to the knee. The leg was put up on a Braun splint, extension being secured by a Kirschner wire inserted through the os calcis. No incisions were made, and the leg was merely wrapped in gauze soaked in compound hypertonic solution, which was changed at four-hourly intervals. Within a week fever had subsided, all traces of cellulitis had disappeared, and the wounds were healthy. Complete healing occupied a period of three weeks from the beginning of the treatment. Bony union is now progressing satisfactorily.

Case 5.—Male aged 61 with acute retention due to prostatic hypertrophy. Urine very foul. Four days after suprapubic cystostomy the wound sloughed and there was cellulitis of the abdominal wall. The patient appeared gravely ill. Packs saturated with compound hypertonic solution were at first applied hourly because urinary escape was not confined to the tube. Within three days there was marked constitutional and local improvement. Large sloughs were shed, and eighteen days later the prostate was successfully removed.

Case 6.—Male aged 34 with left arm involved in machine belt forty-eight hours previously. Elbow-joint opened up, very extensive damage to skin and musculature, obvious sepsis. Amputation was discussed, but after suturing tendons and excising wound margins compound hypertonic solution was tested. Dressings were changed four-hourly, and the joint was irrigated twice daily with the same fluid. Fair-sized areas of skin became gangrenous and the temperature remained high for a week. Once the sloughs had separated improvement was rapid. Within three weeks of the beginning of treatment all wounds had granulated to surface level and most of the sutured tendons had held. The application of skin grafts secured healing with a useful range of movement at the elbow, wrist, and finger-joints.

A CASE OF MALIGNANT STOMAL ULCER

BY

S. ADRIAN YAFFE, M.D.

Resident Medical Officer, Liverpool Chest Infirmary

The following case of malignant stomal ulcer is reported because of the unusual site of a primary growth. This may be an example of an ulcer-cancer, but conclusive evidence is lacking. Stomal ulcers are common enough, but this patient had no symptoms such as would make him seek advice in the twelve years following his operation. Hurst in 1937 stated that 10% of gastro-enterostomies performed for duodenal ulcers develop stomal ulcers. In cases of gastro-enterostomies for gastric ulcers or following partial gastrectomy Hurst says that the incidence is much less, as the gastric acidity is lower. For the same reason, in cases operated on because of carcinoma stomal ulcers never (Hurst) develop.

Clinical History

A male chemical worker aged 56, employed in making soda ash, was referred to the Liverpool Chest Hospital by the tuberculosis department as a case for observation. He was admitted on February 14, 1940, with dyspnoea on exertion, a slightly productive cough, loss of weight, dull aching pains in his left chest, and hoarseness. These symptoms had developed insidiously since November, 1939.

In 1925 he had had gastric symptoms, and as the condition did not improve he was referred to the Manchester Royal Infirmary, where in March, 1928, an operation was performed. An ulcer on the lesser curvature of the stomach was found which had eroded into the pancreas. The ulcer was excised locally, using the cautery, and an anterior gastro-enterostomy with an entero-anastomosis was performed. No gastric analysis was made. The patient apparently had a smooth convalescence.

Functional inquiry revealed little of note. His appetite was fair; he had occasional simple regurgitation of food and flatulence with greasy foods, though he ate bacon with impunity. He had no abdominal pain. His bowels were regular, the stools formed and always brown in colour, but he was occasionally troubled with bleeding piles. His best weight was 10 st. 13 lb. in 1937. In 1939 his usual weight was 10 st. 3 lb. On admission he weighed 9 st.

Examination revealed a tall gaunt man, anaemic, with pale yellowish-grey complexion. His nutrition was only fair, and suggested that he had recently lost flesh. There was no clubbing of his fingers. He had a long narrow chest, which was nevertheless barrel-shaped. There was some dullness of the bases posteriorly, with weak breath sounds and fine rales. The heart was of normal size and no murmurs were present. The blood pressure was 120/70. The abdomen was resistant, and no masses were palpable nor was any tenderness elicited. There were no palpable glands in the axillae, groin, or cervical region.

Radiographs of the chest taken on February 19 suggested bronchiectasis of the lower half of both lungs, enlarged root glands, and spotty shadowing in both lung fields. A differential diagnosis of active pulmonary tuberculosis, pneumonoconiosis, or carcinomatosis was made. A lipiodol radiograph showed no direct evidence of bronchiectasis or bronchial obstruction. The sputum was persistently negative for the tubercle bacillus. The blood sedimentation rate at one hour was 50% for blood plasma (modified Zeckwer and Goodell).

The patient's general condition gradually deteriorated, and he died in his sleep on March 16.

Post-mortem Findings

A necropsy was performed. The lungs contained widespread cancerous metastases. The mediastinal lymph glands were grossly enlarged and cancerous. The pleural lining was free. There was an increase in free fluid in the pericardial sac—about 300 c.cm. The heart was of normal size. The muscle was soft and flabby, with fatty degeneration. There were no valvular abnormalities. The aorta showed fatty changes. The liver was of normal size and contained widespread metastases. The stomach revealed a large malignant ulcer at the junction of the stoma of the gastro-enterostomy with the distal greater curvature. It was about two inches in its greatest diameter. There was a fine linear scar across the lesser curvature, no doubt the site of the old ulcer. There were enlarged glands in the mesentery of the bowel, and the para-aortic glands formed huge masses along the vertebrae from the diaphragm to the bifurcation of the aorta. The gall-bladder, pancreas, spleen, suprarenal glands, kidneys, bladder, prostate, and thyroid showed nothing of note.

The stomach was examined by Prof. Davie at the University of Liverpool. He reported: "Section has been made of a large area of the ulcer and shows widespread active and infiltrating adenocarcinoma. It is not possible at this stage to say whether or not the present cancerous growth was preceded by a simple stomal ulcer, as the malignant involvement is too extensive. The secondary deposit in the liver shows the same adenocarcinomatous structure as the primary growth, which may have been either gastric or intestinal originally, probably the former."

Discussion

Stewart and Hurst in 1931 compared the incidence of chronic ulcer and cancer of the stomach at various sites. Their series of cases may be summarized as follows.

Site of Stomach	Ulcer	Cancer
Cardiac	1 per cent.	15 per cent.
Fundus	82 „ „	13 „ „
Prepyloric	12 „ „	66 „ „
Rest of stomach	5 „ „	6 „ „

Stewart states that about 17% of carcinomata start in an ulcer. Most figures are in approximate agreement with the above. None of the standard textbooks in medicine or pathology mention cancer as a complication of a stomal ulcer. In the *Quarterly Cumulative Index Medicus* from January, 1937, to September, 1939, no case of a malignant stomal ulcer is reported.

The finding of cancer on the greater curvature of the stomach is by no means uncommon, and the site in this case may have been sheer coincidence. On the greater curvature the carcinoma is usually of a fungating type, while the ulcerating type tends to occur at the prepyloric area. In cases of gastro-enterostomy, however, the stoma may be said to be subject to the same influences as the pylorus. Thus, in the case reported this may have been a deciding factor which provoked an ulcerating type of cancer. On the other hand, the case may be a true example of ulcer-cancer.

It is also of interest that the natural history of the cancer in this case was somewhere under twelve years and was of a symptomless nature. The exact age of the cancer must be a matter of conjecture, but if one likes to assume that the patient developed a stomal ulcer within three years of operation, then how long may he be said to have harboured a cancer? Walton, with his careful judgment and experience, has recently reported the difficulties in the treatment and prognosis of carcinoma of the stomach. In view of the above case, it would be interesting to learn the average natural life of a cancer—a point which must receive due regard.

Summary

A case of malignant stomal ulcer is reported.

No case of malignant stomal ulcer has been recorded in the past three years of the *Quarterly Cumulative Index Medicus*.

The problem of an ulcer-cancer or primary cancer is discussed.

The question of the average natural life of a cancer is raised.

My thanks are due to Prof. Davie for his pathological report, to Dr. T. C. Clarke for permission to publish this case, and to Dr. Nicholson, who kindly supplied the summary of the findings in 1928.

Clinical Memoranda

Is the Virus of Rubella becoming Neurotropic?

This question is prompted by my own experience of the recent epidemic as well as by the letters of Dr. Hodges and Dr. Harrison in the *Journal* of March 30 (p. 548) and of April 13 (p. 637), respectively. And to it I will add a complementary question: Is it becoming "rheumatic"?

Between mid-February and the early part of May I saw fourteen cases of rubella, of which eight—57%—have had neuritis or "rheumatism," or both, as complications. The ages of the six patients (three males and three females) without complications were 11, 18, 22, 25, 25, and 28—average 21½ years. The ages of the eight patients with complications were 18, 22, 26, 27, 38, 44, 50, and 68—average 36½—and all were females. I notice that all four of Dr. Hodges's patients were females, with an average age of 32. That there was only one child in my series is remarkable, and may be accounted for by the fact that very few of my child patients are left in this neighbourhood on account of evacuation. On the other hand, I presume Dr. Hodges's cases occurred in a "reception area," where the proportion of children in the population is at least as great as usual. The disease appears to be attacking older people than in most epidemics, and the average age of those with complications is greater still.

In two of my cases an older member of a family (a mother and a grandmother, both of whom had complications) had caught the infection from a younger member of their respective households with no complications. Neither of these older patients had recognized their complaint as German measles, as, so far as is known, neither of them had had a rash (though both had the characteristic conjunctival injection), and only sent for me on account of complications on the third and seventh days respectively, when a faint evanescent rash might have faded.

In the 1937 edition of Price's *Textbook of the Practice of Medicine*, in the section written by Dr. Box, it is stated that "complications and sequelae are for all practical purposes non-existent." Among the trivial complications that occasionally occur are mentioned "rheumatic pains of a mild type," while encephalomyelitis is given as very rare. A few cases of encephalitis and encephalomyelitis have recently been reported, especially in France, but I have seen nothing of this kind. It may be noted in passing that peripheral neuritis occurs occasionally as a complication of influenza and scarlet fever.

Here are brief clinical notes of my eight cases with complications, arranged in order of age.

Case 1.—Age 18. Mild attack. Slight numbness and tingling of fingers started on fifth day. Would not have mentioned it if I had not asked her about it.

Case 2.—Age 22. On the third day severe pain began in the cervico-occipital region and eyes, with less severe pain in shoulders and weakness of wrists and hands. The pain was spasmodic and unaffected by movement or position, or by pressure on the enlarged glands. Two days later the pains had almost gone, and the strength of the grip was returning.

Case 3.—Age 26. Neuritis of right arm and hand began on the thirteenth day, and had not quite cleared up a week later. The primary symptoms in this case were rather severe, and the patient felt very weak for about twenty-one days.

Case 4.—Age 27. Moderately severe pains in arms and legs started on the fifth day and lasted about three days.

Case 5.—Age 38. Severe pain and swelling of wrists, hands, and fingers began on the fourth day and gradually subsided in the course of a week.

Case 6.—Age 44. Pain and swelling of wrists and hands and pain in elbows and ankles started on the third day and lasted for three days.

Case 7.—Age 50. Fifteen days after her daughter had recovered from rubella she felt ill and had red eyes, but did not take much notice of it. So far as she knew she had had no rash, but had not looked for one. Five days later she had severe pain in the right elbow, forearm, and hand, with slight swelling of the wrist and fingers. Pain was worst in the fingers, especially the middle finger, and was particularly severe at night. Numbness and weakness were complained of. Sensation to light touch in the fingers was dulled. The grip was weak. Triceps and supinator jerks diminished. The condition was much better on the following day, but the left hand was now slightly affected. She was nearly well a week later. This patient had had a rheumatic tendency since scarlet fever in childhood, and there appeared to be slight chronic osteo-arthritis in her fingers and elsewhere.

Case 8.—Age 68. Two days after her grandson had recovered from rubella she fell ill herself with sore eyes, aches all over, nausea, and giddiness. She had had no rash so far as she knew, but had not looked for it. She sent for me three days later. Her eyes were red, and the glands behind the ears were enlarged and tender. No definite rash was visible. Four days later—the seventh day of the disease—she had pains in hands, wrists, and elbows, with tingling in her hands, which also "felt dead." The symptoms slowly improved, but six weeks later tingling and numbness had not quite disappeared.

Surely this presents a remarkable change in what has hitherto been regarded as a mild and rather unimportant disease, practically free from complications, and one wonders what future epidemics of rubella are going to be like. Perhaps we shall have sporadic cases between epidemics of unexplained "rheumatism" or neuritis, without a rash, that are really due to the virus of rubella; and we may have had such cases in the past—unrecognized.

Perhaps "neurotropic" is the wrong word to apply to the present series of cases, if by "neurotropic" is meant an affinity of the virus for the actual neurones, as occurs, for instance, in poliomyelitis and encephalitis lethargica. In these cases of rubella, with their swollen wrists and hands and other "rheumatic" manifestations, the affinity would seem to be rather for the white fibrous tissues, including particularly the fibrous sheaths of peripheral nerves. The neuritis appears to be interstitial rather than parenchymatous.

It would be interesting to speculate on the relationship of these cases to rheumatic fever, on the one hand, and to the common but unexplained cases of fibrositis, peri-arthritis, and neuritis that occur so frequently in our practices, on the other. Are we perhaps witnessing the birth of a new disease, derived from rubella, but with possible relations in many other directions—"epidemic rheumatism" or "epidemic peripheral neuritis"?

NORMAN A. SPROTT, D.M., M.Ch., F.R.C.S.

According to the recently published report on the Swiss medical profession for 1938, the number of doctors in Switzerland inclusive of hospital residents in that year was 4,734, or one doctor to 882 persons in a total population (1937) of 4,176,400 inhabitants. 113 were employed in public health or as school doctors. According to the Swiss statistical bureau there are 544 hospitals in Switzerland with 59,871 beds and 9,696 nurses, of whom 7,969 are women; 87 per cent. of the beds are intended for adults and 13 per cent. for children.

Reviews

IMMUNOLOGY

Traité de l'Immunité dans les Maladies Infectieuses. By Dr. Jules Bordet. Second edition. (Pp. 880. $3.90.) Paris: Masson et Cie. 1939.

It is some twenty years since immunologists throughout the world welcomed the appearance of Dr. Jules Bordet's *Traité de l'Immunité*. Presented with all the incisive clarity and originality of outlook characteristic of Dr. Bordet, this book had an immediate success; it was soon sold out. Years went by and no further edition appeared; most people had abandoned all hope of it. However, Dr. Bordet has placed all those interested in immunology under a further debt by producing a second edition of his admirable treatise. Despite advancing years he has kept abreast of all advances which recent times have seen in this science; he has in fact continued to make important contributions to immunology by his personal researches, and in the light of all this accumulated knowledge Dr. Bordet has rewritten his book. It has increased in size; that was inevitable. It has also undergone a complete rearrangement. In the first edition the several chapters constituted a series of essays expounding the author's views on the various aspects of immunity. In this new edition the subject is presented in a more orderly manner so as to make it more available as a book of reference. It is divided into four parts. The first gives a general review of the whole subject, containing chapters on infection and virulence, natural and acquired immunity, chronic disease and allergy, non-specific resistance to infection, and the general significance of the phenomena of immunity.

The second part of the book is devoted to the cellular aspects of immunity, intracellular digestion, inflammation, the phagocytic cells, their role in the defence of the tissues against microbial invasion, and the factors, such as the opsonic action of antibodies, which aid the phagocytes. These chapters are a good blend of the fundamental researches of the past and the more recent additions to our knowledge. No doubt all the author's views would not meet with general acceptance, and few would agree with him when he suggests that motility is a factor contributing to the defence of a bacterium against the phagocytic cells. Surely if this were so the H antibodies would play a more effective part in immunity to the Salmonella than they do. Part III concerns humoral factors in immunity and comprises chapters on the functions of immune sera, complement, antigens, antibodies, antigen–antibody reactions and their specificity. Naturally one would not expect all recent work to be mentioned; that would be quite out of the question. But it is rather surprising to read an account of antigen–antibody reactions which contains no reference to any of Marrack's work.

The concluding section of the book contains accounts of the collaboration of the different factors in defence against infection, immunity in different diseases, and anaphylaxis and allergy. It is in the second of these chapters—that on immunity in different diseases—that one finds a consideration of immunity to virus infections. This extends to four pages only. It is true, as the author points out, that reference is made from time to time to antiviral immunity in other parts of the book; all the same the space devoted to this aspect of immunity does seem a little inadequate. And it is surely rather unfair that Degwitz should be given the credit of advocating the use of convalescent serum in the prophylaxis of measles; his contribution to this subject was not nearly of such distinction. In the preface Dr. Bordet draws attention to the fact that a list of references in now included; the absence of this from the first edition was one of its weak points. But reference to the original publications is made in such an abbreviated way as to be of very little value; it amounts to no more than a letter indicating the journal and followed by the last two figures of the year of publication. As in the majority of French scientific books there is no index, only a table of contents.

PUBLIC HEALTH

Textbook of Public Health. (Formerly Hope and Stallybrass.) By W. M. Frazer, O.B.E., M.D., M.Sc., D.P.H., and C. O. Stallybrass, M.D., D.P.H. Tenth edition, revised and enlarged. (Pp. 504. 21s. net, postage 7d.) Edinburgh: E. and S. Livingstone. 1940.

The work on public health which first saw the light in 1874 under the title *Medical Police* retained some of its penal associations until its seventh edition, which was published as Buchanan and Hope's *Forensic Medicine and Public Health*. By 1915 the book had become transmuted into Professor Hope's *Public Health*, under which designation we expressed our appreciation of it, in 1926, in these pages. The tenth edition, which now appears, happily maintains the link with Liverpool, its authors being the medical officer of health and the deputy medical officer of that city. The world of public health having witnessed many changes since the date of the previous edition, the present work is considerably increased in size and in parts rewritten. Among the new chapters are those on tuberculosis, smoke abatement, genetics, hospital administration, and civil defence. The chapter on tuberculosis deals with the paths of invasion, immunity, hospital treatment, the dispensary, after-care, and tuberculosis colonies. The chapter on smoke abatement refers to the flue-gas recorder, the photo-electric cell indicator, and other devices for smoke control, together with smoke standards. The subject of genetics, though concisely presented, is not too difficult to follow. It includes blood-group inheritance. Hospital administration is treated with proper fullness, and well illustrated by means of appropriate plans and a photograph. In their closing chapters, on civil defence, the authors state with regard to evacuation that "the movement of such large numbers of children, and of women a proportion of whom were pregnant, presented considerable problems in medical organization"—a sentiment in which most of their colleagues in public health will strongly concur. The book is sound in all the essentials, and should continue to be of service to medical graduates and licentiates studying for the diploma in public health.

NERVOUS DISEASES

Textbook of Nervous Diseases. By Robert Bing, Professor of Neurology, University of Basle. Translated and enlarged by Webb Haymaker, Assistant Clinical Professor of Neurology and Lecturer in Neuro-anatomy, University of California, from the fifth German edition. (Pp. 838; with 207 illustrations, including 9 in colour. 50s. net.) London: Henry Kimpton. 1939.

Professor Robert Bing has long been known to English students of neurology through his book on *Regional Diagnosis*. Until recently, however, his *Textbook of Nervous Diseases* was available only in German. The present edition in English is based upon the fifth German edition, and has been translated and enlarged by Dr. Webb Haymaker. The book originally consisted of a series of lectures, and, though no longer in this form, still bears traces of its origin in the arrangement of the subject-matter. The first three chapters deal with diseases of the peripheral nerves. Then follow two chapters on the dyskinesias, which begin with a consideration of tremor

and other involuntary movements, and pass by way of the myotonias to myasthenia gravis, the inclusion of which under this heading is more justifiable by the exigencies of lecturing than in the more considered planning of a text-book. Elsewhere the arrangement is based more upon anatomy than upon nosology ; subacute combined degeneration, for example, being included with Friedreich's disease in a chapter on combined system diseases. The treatment of the subject is almost exclusively pathological and clinical, and there is little discussion of neurophysiology. Within the limits imposed by the arrangement and choice of material the book is an excellent description of clinical neurology. There are numerous illustrations, and a very comprehensive series of references at the end of each chapter.

EVERYDAY GYNAECOLOGY

Office Gynecology. By J. P. Greenhill, B.S., M.D., F.A.C.S. (Pp. 406 ; 106 illustrations, including 35 full-page plates. 14s. 6d. net, postage extra.) Chicago: Year Book Publishers Inc. ; London: H. K. Lewis and Co., Ltd. 1939.

General practitioners interested in gynaecology will welcome this new book by Greenhill, whose gift for clear and concise expression is familiar to all readers of the *Year Book of Obstetrics and Gynecology*. In the courses of lectures and demonstrations he has given to practitioners in Chicago Professor Greenhill has become thoroughly acquainted with the problems which confront those whose opportunities for postgraduate training and experience in gynaecology are necessarily limited. He knows the questions they continually find difficulty in answering, and the common complaints which are so often inadequately treated. As the result of this experience he has written a most excellent book of guidance in which every aspect of consulting-room gynaecological practice receives attention.

The opening chapter deals with the important details of taking a history, and this is followed by a well-illustrated account of the routine of a thorough clinical gynaecological examination. The importance of post-natal care in reducing the incidence of the gynaecological complications of pregnancy is emphasized in a chapter devoted to " prophylactic gynaecology," in which a summary is given of the conduct of the puerperium, with special reference to the dangers to be avoided. The subjects of vaginal discharge, gonococcal infections, cervical infections, and sterility are excellently discussed ; and the advice given should be of the greatest assistance to practitioners. Many consultants would not agree with much of the treatment advocated for dyspareunia. The vaginal glass dilator habit is one which fortunately is not widely encouraged, and when immediate, permanent, and excellent results can be obtained by a minor plastic operation there is little to commend the older method. The use of pessaries is well described and beautifully illustrated, and the chapters dealing with backache, vaginal douching, and contraception should be generally useful, for there are few aspects of gynaecology which demand more of the practitioner's time than these three.

The relation of endocrinology to practical gynaecology is still a source of confusion to many doctors, and for those who wish to see light in the darkness Professor Greenhill has provided an excellent beacon. Present-day knowledge of the sex hormones is admirably summarized and illustrated, and with this as a basis the indications for treatment, and the dosage required, are given. This book not only presents a useful summary of everyday gynaecological practice, but it does so in a very readable manner and in a volume that will fit into an inconspicuous corner of the consulting-room library. It deserves success.

PSYCHONEUROSES IN THE LAST WAR

Shell Shock in France 1914–18. Based on a War Diary. By Charles S. Myers, C.B.E., F.R.S. (Pp. 146. 4s. 6d. net.) Cambridge: University Press. 1940.

This is an interesting autobiographical sketch by Dr. Myers of his experience during the last war both in France and in this country. It shows up the ignorance, incompetence, and prejudice in the management of the psychoneurotic patient which were responsible for the large number of such cases, and the enormous bill in pensions for these conditions, which has contributed in no small measure to the high figure of income tax with which we started the present war. It does not, however, give any definite and clear line as to what ought to have been done in the present conflict to minimize the problem which is already beginning to show itself, but which will assume much larger proportions in later stages. The author rightly deprecates the term " shell shock," but is constantly employing it himself and even uses it in the title of the book. The fact that the book is compiled from a war diary no doubt accounts for his toying with the petechial haemorrhage theory in the earlier pages, but surely it would have been better to expunge such erroneous ideas from the book altogether. Dr. Myers has had lots of experience both during and since the war of 1914–18, and we would have liked a much more definite lead from his pen rather than this pleasant but discursive narrative which will add nothing to the expert's knowledge and do little to instruct the neophyte.

Notes on Books

Volume III of the tenth edition of *Cunningham's Manual of Practical Anatomy* (Oxford University Press, 15s.), which comprises the description of the head and neck, including the brain, has been revised by Professor J. C. BRASH and Dr. E. B. JAMIESON. This well-known student's book represents some of the best characteristics and traditions of the Edinburgh School of Anatomy. The directions for dissection are easily followed, so that very little personal assistance from demonstrators is needed and a beginner can soon acquire the habit of independence. This independence is greatly helped by numerous clear-cut illustrations, which form a special feature of the work and enable the student to dissect without using large and costly books of plates, which are out of place in a dissecting room. Although there are a considerable number of minor alterations and amendments in this new edition of the *Manual*, it does not differ very much from its more recent predecessors. Figure 54 is, however, deserving of special mention. It is a coloured plate representing a dissection of the head, seen from the side, and showing important relations of the ear, sigmoid sinus, brain, and contents of the orbit. Details of this dissection are shown in plates reproduced at a higher magnification in Figs. 103, 104, and 144. These portray many essential relations of surgical importance, such as of the maxillary air sinus, the pharyngo-tympanic tube, the tympanic membrane and antrum, portions of the cranial nerves and of the meningeal and superficial cerebral vessels. These plates are of great value in presenting, at approximately life-size, parts which are difficult to display in an ordinary dissection, and such illustrations form a permanent record of good dissections, which have an advantage over the actual preparations in being readily available for home study.

A new edition of Mr. HAMILTON BAILEY'S *Demonstrations of Physical Signs in Clinical Surgery* is published by John Wright and Sons at 21s. Dedicated to that well-known teacher Mr. Russell Howard, and introduced by a quotation from Mr. Henry Wade, " The wards are the greatest of all research laboratories," this now well-known work, which first appeared in 1927, has reached a seventh edition. This is better than ever ; the addition of small-type footnotes giving a few

details of those whose names are associated with particular signs is an attractive additional feature, while some of the illustrations have been replaced, revised, or added to. Among the signs of a thyroid enlargement mentioned we should have liked to see the characteristic outward and backward displacement of the carotid sheath (James Berry) and some reference to Kocher's test for scabbard trachea. Kocher's name does not appear in the chapter on the thyroid, which is therefore a little like *Hamlet* without the Prince. For this edition as a whole, however, we have nothing but praise. The text is concise and to the point, and the illustrations are good.

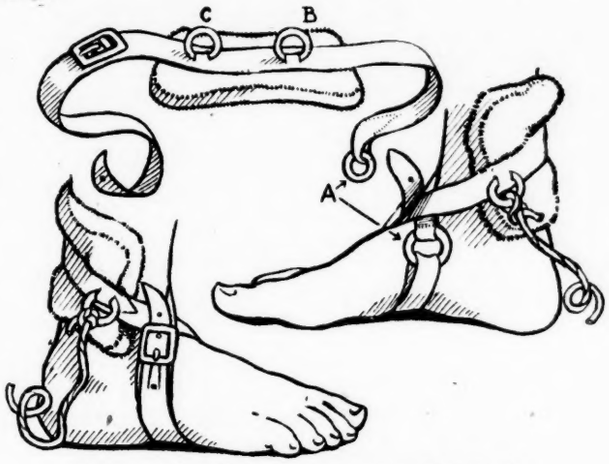
In compiling *The Practitioner's Pocket Book* (John Bale Medical Publications, Ltd., 7s. 6d.) Dr. D. S. DAVIES has kept in mind the busy doctor who wants a little vade mecum for quick reference when he is beyond reach of the consulting-room bookshelf. The arrangement is alphabetical and the notes run from Abortion to Worms, with three lines on the treatment of wounds. They are followed by an appendix on drug actions and indications, and another which lists an immense number of proprietary drugs, etc., by way of guidance "through the maze of specialities of which patients and consultants talk so glibly." The pocket-book is interleaved here and there with plain pages so that the practitioner can add his own notes at the appropriate places.

Preparations and Appliances

EXTENSION WITH THOMAS'S SPLINT IN FIRST-AID WORK

Mr. F. D. MURPHY, F.R.C.S., Acting Medical Superintendent, Fulham Hospital, and Dr. H. M. RUSHBROOK, River Emergency Service, Port of London Authority, write:

The following description of a simple means for applying extension when it is necessary to use a Thomas splint in first-aid work is suggested, as it has been found that, owing to the almost universal discarding of boots in favour of shoes, the usual clove hitch is both uncomfortable and painful. It has been made by Sister D. M. Bloxham, S.R.N., of the River Emergency Service of the Port of London Authority, and its simplicity and utility seem to us to warrant its wider knowledge.



Diagrammatic sketch showing strap and application.

It consists of a piece of canvas webbing as used by upholsterers, 40 inches long by 2 inches wide. To one end is strongly sewn a steel ring (A in diagram) 1½ inches in diameter, and two similar rings (B and C) are also sewn on one side of the webbing 5 inches and 10 inches from this end, care being taken that the diameters of the rings are in the long axis of the webbing. A buckle is then sewn transversely to the webbing 3 inches from the last ring and on the same side. The strap is completed by attaching to the reverse side a pad about 7 inches by 4 inches overlapping the edges of the webbing and extending a little beyond these two rings. The pad used in the original consisted of a length of plain wool knitting folded three times to give an adequate thickness.

The method of applying the strap is as follows. The shoe is removed and the padded part of the strap is placed behind the tendo Achillis, the end with the ring A being on the outer side. This end is carried over the instep and now lies on the inner side of the foot. The free end of the strap is then carried over the instep and under the sole, to be threaded through ring A, and is then doubled back on itself under the sole over the instep again and fastened to the buckle. Two lengths of strong cord are attached to rings B and C for extension on to the end of the Thomas splint.

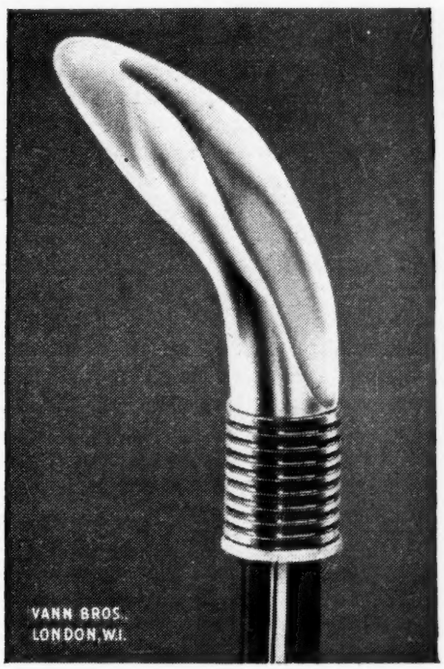
The retail cost of the materials, excluding the pads, was: one yard of upholsterers' webbing 3d., three steel rings 3d., one buckle 2d.

ILLUMINATED ANAL SPECULUM

Mr. C. NAUNTON MORGAN, F.R.C.S. (London, W.1) writes:

The use of light-transmitting plastic material for illuminated retractors (curvlite) prompted its trial as a method of examining the anal canal.

The difficulty of visualizing the sides of the anal canal throughout its length is well known, but a successful attempt has been made by Messrs. Vann Bros., Ltd., of 63, Weymouth



Street, W.1, on my suggestions to produce a curvlite anal speculum. After many trials as regards shape and size, an instrument has been produced based on Lockhart-Mummery's well-known anal speculum.

The instrument (illustrated) is made of boilable curvlite material which has the advantage of flood-lighting, with a cold light, the sides of the anal canal. It is so shaped that it affords easy introduction, and by gentle rotation allows close inspection of the whole lining of the anal canal.

BROMETHOL

Bromethol is the name chosen by the Pharmacopoeia Commission as the British title for tribromethylalcohol, the basal anaesthetic that is best known under its original proprietary name of avertin. It is obviously necessary to offer as an alternative some single title, since the medical profession will not burden its mind with more than one name for one drug. It is satisfactory to note that in this case a sensible collaboration in respect of nomenclature has been adopted by leading British firms. Samples have been received from British Drug Houses, Boots, and Burroughs Wellcome and Co. The preparations under notice are sent out with instructions regarding dosage and mode of administration.

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SCIENCE IN WAR

In a provocative little book just published[1] an anonymous group of twenty-five scientists point out that the full use of our scientific resources is essential if we are to win the war and that to-day they are being only half used. They give many examples. The fighting Services have not yet adopted the elementary methods of science. A study of the literature would at once condemn most of the laborious expenditure of paint and time which goes by the name of camouflage. Observations made in the Spanish war on the development of the tank and of anti-tank defence methods should naturally have prompted experiments which would have prevented—so it is claimed—the overwhelming success of the German mechanized divisions. To handle large bodies of men and material efficiently the whole range of the psychological and statistical techniques of the social sciences may be necessary. Periodic studies of representative samples of the Allied Forces could hardly have failed to detect the early symptoms of the Maginot Line psychosis and prevent its development. But the failure to utilize science to the full affects every part of the national effort. In agriculture we note neglect of pastures, inefficient use of fertilizers, inadequate application of motor power, improper methods of seed production, losses from disease and parasites, and antiquated methods of stock breeding. Food plans made by food sellers show the cloven hoof of vested interests rather than the seal of physiological righteousness. "It is to our lasting disgrace that in time of peace we had no national food policy and made no use of the great advances in the science of nutrition." Despite all we have learned of industrial welfare and the relations of fatigue and output, men and women have been urged to work excessive hours in ill-ventilated factories. Buildings are still being run up with scant regard to economy of materials, functional efficiency, or structural A.R.P. Propaganda, started without preliminary social research or accurate analysis of the situation with which it attempts to deal, is apologetically withdrawn when it produces depression and outcry. In this survey medicine alone comes out well with the prophylaxis of typhoid, typhus, and tetanus, the introduction of chemotherapeutic agents against bacterial infections, and the large-scale development of blood and plasma transfusion. The neglect of science is all the more surprising inasmuch as many of its triumphs are generally known and praised. The defeat of the magnetic mine by "degaussing" is still fresh in our minds, and it is well known that Germany could not have lasted more than a few months in 1914 had not Haber shown how to make nitrates synthetically. Haber died a refugee from Nazi persecution.

[1] *Science in War.* Written by 25 Scientists. A Penguin Special. S74. (Pp. 140; 6d.) Penguin Books, Harmondsworth, Middlesex.

The twenty-five collaborators who frame this indictment conclude that British scientists must organize and must educate the country, until the leaders who have brought us to our present pass are replaced and the scientist is "not on tap but on top." This sounds a little like technocracy, which was not very successful in the U.S.A. It does not explain how it is that the Nazis, who despise the scientific spirit and method, have made more use of science than we. The German genius for applied science still survives, and Germany has triumphed through the perfection of other people's discoveries, such as the aeroplane, the tank, and the parachute. Moreover, the Germans are not afraid to talk about the application of new knowledge to military science; and, as most of them have had military training, few such applications are overlooked. The Germans never made any secret of their aircraft development, and very little about their preparations for the invasion of Norway or their full-dress rehearsal in Czecho-Slovakia for the attack on the Western Front. The parade of secrecy in this country is rather ludicrous in contrast, and in many instances it is an inexcusable regression from the principles of freedom of scientific discussion and interchange of ideas. Scores of our laboratory workers have waited in vain for opportunities to apply their talents and resources to the war effort and are still unable to make contact with the groups with which they could most profitably co-operate. It would seem theoretically easy to farm out the many problems calling for solution, but unfortunately some of the professional organizations which the Government has consulted are effete and do not represent the generation of active researchers.

But neither technical skill nor pride in her arms explains the paradox that Germany, the avowed enemy of the scientific spirit, has made more use of science in this war than we. Looking back over the last five years we are reminded that

> One man, with a dream, at pleasure,
> Shall go forth and conquer a crown;
> And three with a new song's measure
> Can trample an empire down.

Three men with such a song have subjugated Europe from the North Cape to the Pyrenees, and their followers have grasped at every weapon that might be turned to their advantage. They will not be defeated by science alone; it must be backed by a sincere belief in the value of liberty and the ideal of progressive development of our commonwealth of nations. We need leaders who regard this struggle as the blaze of a new dawn and not the fire of a dying day. What has sustained our people in the ordeal of the past year and more is not the efforts of political leaders and civil servants, but the knowledge that we are living in exciting times which have no parallel since the Elizabethan era and that we have a destiny to fulfil. The wireless and the aeroplane have extended the confines of our world, social and economic changes have undermined the old creeds, and the new ideologies are worshipped with a fervour which encourages the extremes of fanaticism and bad faith. The *laisser-faire* conception of democracy has collapsed. Science can after all be only a tool, albeit the indispensable tool, in dealing with such a situation, and given the right ideals and leadership it is

difficult to believe that the neglect of science can continue. Meanwhile, to quote from the concluding chapter of *Science in War*, "Thought, ordered and organized thought, directed to speedy decisions, is the first requirement. All professional people now have the responsibility of making this kind of effort, of analysing the needs of action in their own particular spheres, of acting in collaboration with local and national authorities, and where these authorities are lacking in initiative or wasteful in effort, of not fearing to criticize or to initiate effective action on their own account."

ANGULAR STOMATITIS AND VITAMIN B

In 1888 and 1897 Strachan[1 2] described a syndrome of neuritis with an eczematous condition at the corners of the mouth, redness and irritation of the eyelids and lips, and a similar condition at the muco-cutaneous line of the prepuce and anus. Since then epidemics and sporadic cases, usually unassociated with neuritis, have been described in widely separated areas in Africa, America, Asia, and Australasia. Nicholls and Nimalasuriya[3] reported that 19.8 per cent. of 1,497 children examined in North Ceylon showed the characteristic mouth lesions, and Oden and co-workers[4] state that it is a common disease in the Southern States of the U.S.A. There is little doubt that the lesions described in the various parts of the world represent one and the same disease, though different names have been applied to it, such as perlèche, cheilosis and angular stomatitis, the oro-genital syndrome, pellagra sine pellagra, and, more recently, ariboflavinosis; it is probably identical with kwashiorkor on the Gold Coast. Sebrell and Butler[5] describe the lesion as beginning with pallor of the mucosa of the lip in the angle of the mouth without involvement of the buccal mucosa. The pallor is followed by maceration and then by the appearance of superficial transverse fissures at the angles of the mouth. The fissures may extend downwards from the angle into the skin and become encrusted as perlèche. Superficial denudation of the mucosa makes the lips unduly red along the line of closure. There is also a fine scaly desquamation on a mildly erythematous base in the naso-labial folds, the alae nasi, the vestibule of the nose, and on the ears. Others have described associated erosion of the tongue, erosion of the muco-cutaneous junction of the prepuce, anus, and vagina, and eczema of the scrotum. Symptoms more rarely reported are peripheral neuritis[2 6 7] and retrobulbar neuritis.[8 9] We referred to the interstitial keratitis occurring in vitamin B_2 deficiency in our issue of May 25 (p. 857).

In 1925 Goldberger and Tanner[10] produced the syndrome in man in their experiments with a casein diet, and in 1939 Topping and Fraser,[11] and Tomlinson,[12] reproduced the mouth lesions in monkeys by a diet deficient in vitamin B_2. Several workers have cured it by autoclaved yeast or a well-balanced diet. Aykroyd and his colleagues[13] treated a group of cases with the nicotinic acid fraction of vitamin B_2 (the pellagra-preventing factor), but though a few cases responded to treatment the majority were unaffected, and it was concluded that another factor was concerned. Katzenellenbogen[14] obtained good results with nicotinic acid, but Landor[15] found that it was of no use. Spies[16] reported the cure of the stomatitis, glossitis, and genital lesions with nicotinic acid, and of the lesions at the angles of the mouth, eyes, and nose with the riboflavin fraction of vitamin B_2. There was some doubt, therefore, as to which fraction of vitamin B_2 was concerned, but Sebrell and Butler[17] reproduced the disease in thirteen out of eighteen women in an institution by means of a diet deficient in riboflavin, and after proving the ineffectiveness of nicotinic acid in its treatment cured it rapidly by the administration of riboflavin (0.075 mg. per kilo of body weight per day). Oden and co-workers[4] reported a marked improvement within two days of the institution of riboflavin therapy. Wright[18] would add that an adequate sulphur intake is an essential for the action of vitamin B_2, and claims to have cured cases in which the sulphur content of the food was defective by injections of contramine or by ichthyol (40 grains a day) orally; in one of these cases previous vitamin therapy had failed.

The interpretation of these varying therapeutic responses and the relationship of angular stomatitis to pellagra have given rise to much discussion. Sebrell[5] pointed out that riboflavin deficiency may occur in man with or without pellagra, and Aykroyd,[13] Landor,[15] and others noted that frank pellagra never occurred in any of their cases. In an able review of the subject Stannus[19] suggests that angular stomatitis may appear when there is any break in the chain of agents by which the dehydrogenase enzymes are able to bring about the oxidation of their appropriate metabolites. These agents, which we may picture as handing the hydrogen successively from one to another until it can be combined with the oxygen of the atmosphere, are coenzyme, which contains nicotinic acid; coenzyme factor, which contains riboflavin; and cytochrome and cytochrome-oxidase, which are haemochromogen-like derivatives of haematin. If we may push Stannus's argument a little further we may suggest that iron deficiency acts by interfering with the activity of cytochrome or cytochrome-oxidase and thus explain the occurrence of angular stomatitis in idiopathic hypochromic anaemia. Certainly the symptoms are sometimes reproduced with great fidelity in the Plummer-Vinson syndrome, even to the extent of genital involvement. The chain most often breaks at the riboflavin link, but the same muco-cutaneous symptoms appear when the other links give way, and we can therefore understand why they respond to different therapeutic agents at different times and in different circumstances.

[1] *Sajous' Annual*, 1888, Vol. I, 139.
[2] *Practitioner*, 1897, **59**, 477.
[3] *Lancet*, 1939, **1**, 1432.
[4] *Publ. Hlth. Reps.*, Wash., 1939, **54**, 790.
[5] Ibid., 1938, **53**, 2282.
[6] *W. Afr. med. J.*, 1928, **2**, 127.
[7] *Ann. trop. Med. Parasit.*, 1918, **12**, 109.
[8] *Trans. roy. Soc. trop. Med. Hyg.*, 1936, **30**, 251.
[9] *Lancet*, 1937, **1**, 1225.
[10] *Publ. Hlth. Reps.*, Wash., 1925, **40**, 54.
[11] Ibid., 1939, **54**, 416.
[12] Ibid., 431.
[13] *Lancet*, 1939, **2**, 825.
[14] Ibid., 1939, **1**, 1260.
[15] Ibid., 1939, **1**, 1368.
[16] *Ann. intern. Med.*, 1939, **12**, 1830.
[17] *Publ. Hlth. Reps.*, Wash., 1939, **54**, 2121.
[18] *British Medical Journal*, 1936, **2**, 707.
[19] *Lancet*, 1940, **1**, 352.

It is probable that the neuritis which sometimes accompanies angular stomatitis is not an integral part of the syndrome, but is due to a simultaneous deficiency of vitamin B_1.

A good review of the B system of vitamins has recently been presented by Willstaedt.[20] B_1, also known as aneurin or thiamine, is used in the treatment of beriberi and neuritis. Nicotinic acid and its amide were formerly included in the B_2 or anti-pellagra moiety, and seem to be the factor effective in pellagra. The term B_2 is now becoming restricted to riboflavin, which, as we have just seen, seems to be of special value in treating the muco-cutaneous lesions. Absence of B_6 or adermin has been found to cause a microcytic hypochromic type of anaemia in dogs,[21] but there is no evidence yet that adermin deficiency ever gives rise to anaemia or other symptoms in man. Spies and co-workers[22] have tested adermin in human pernicious anaemia, and concluded that it does not act specifically either as the true anti-pernicious anaemia factor or as the extrinsic factor of Castle. All these pure fractions of the vitamin B complex are now at the physician's disposal, and they open the way to a fascinating field of clinical experimentation on the origin of common symptoms.

INDUSTRIAL WELFARE

The great increase in the number and size of the factories engaged in production of munitions means, or should mean, a more than corresponding increase in the scope of the industrial welfare movement. Ever since the last war the Industrial Welfare Society has played an important part in organizing this movement, and it has now issued a booklet entitled *Elements of Industrial Welfare and Personnel Management*[23] for use during the present war. The booklet sets out in the shortest and simplest form the essential duties of welfare and personnel supervisors in wartime. These duties are more comprehensive than those usually assigned to supervisors in peacetime, for they not only include the well-recognized duties of supervising working conditions in the factory as they affect the health, safety, and well-being of the workpeople, and the establishment of close co-operation between the employees and the management. They go much further in claiming that in times of emergency, such as the present, the supervisors should be responsible for the recruitment, selection, and training of new workers, for their allocation to suitable jobs, and their transfer and promotion within the factory. In many factories these offices have hitherto been assigned to foremen and departmental managers, but it is maintained in this booklet that these officials now have more important work to perform. Though this may be true, it does not follow that their recruitment duties should be transferred to welfare supervisors. How many such supervisors—or departmental managers for that matter—have had any sort of psychological training in the principles and practice of vocational guidance and selection? During the last war the usual custom was based on the familiar "hire and fire" system, and in consequence there was an enormous waste of time and effort in training workers who in many cases proved to be unsuitable and had to be dismissed. The labour turnover was very great, and the war effort as a whole suffered a substantial loss of efficiency. It is most important that in the present war industrial psychologists should be employed for vocational work, so far as they are available. They would be responsible not only for the choice of the most suitable candidates—who in many cases would be new to industrial work—but for giving them a simple training in their jobs and the best methods for their performance.

As has been emphasized on many occasions, the medical and surgical care of the munition workers is particularly necessary and important, and the Fabian Society has indicated its interest in the subject by issuing a pamphlet (Tract Series No. 253, price 3d.) on *War Effort and Industrial Injuries*. It is written by Prof. Hermann Levy, and it briefly describes the cost of industrial accidents, their prevention, the medical treatment of injuries, and the rehabilitation of injured work

[20] *Schweiz. med. Wschr.*, 1940, **70**, 159.
[21] *Amer. J. med. Sci.*, 1940, **199**, 163.
[22] *Nature*, 1940, **145**, 388.
[23] To be obtained from the Industrial Welfare Society, 14, Hobart Place, London, S.W.1, price 4d., post free.

HEREDITARY ATAXIA AND SPASTIC PARAPLEGIA

A recently issued volume[1] of the *Treasury of Human Inheritance* is devoted to hereditary ataxia and spastic paraplegia. The literature is covered as completely as possible, and cases are included if two or more members of a family group are affected: 273 pedigrees are reproduced, together with very full notes from the original papers and alphabetical and chronological bibliographies. In this number, however, there is a welcome innovation. With the help of Dr. E. A. Carmichael, Dr. Julia Bell has added a personal investigation of forty-six family groups; single cases are not excluded in this series. Miss Bell does not attempt an exhaustive analysis, but her account is filled with information of the highest genetic and neurological interest. Only a few points can be mentioned here. The cases are classified into three groups: A, ataxia with absence of deep reflexes; B, spastic ataxia with deep reflexes present or exaggerated; C, spastic paraplegia. It is considered that no line can be drawn between these groups—certainly not between A and B. Genetically, all groups reveal much the same phenomena, and although there is a strong tendency for members of the same family to fall into the same group there are many exceptions. In all groups recessive and dominant cases occur, and a tentative separation is made in the tables, which subsequent tests show must be relatively efficient. One striking difference between the recessive and dominant cases is that the latter show much greater variability in age of onset. Some surprise is expressed that this should be so, but surely modern genetical theories of natural selection provide a possible explanation. The heterozygous state tends to be more variable than the homozygous state. It might be anticipated, therefore, that when a condition may be due to a dominant or to a recessive gene the dominant cases will be more variable, because they represent a state which is more easily modified by other influences. It is being found with ever-increasing frequency in human genetics that what is apparently a single condition clinically may be due to the operation of any one of a number of genes. In the present instance there is, first, the distinction between dominant and recessive cases. One pedigree (336) suggests sex-linked inheritance, and stronger evidence is provided by a pedigree published too late for reproduction but included in the bibliography (299). Taking both together, there can be no reasonable doubt that, very rarely, a sex-linked gene may be responsible. But this does not exhaust the possibilities: it is probable that any

[1] *The Treasury of Human Inheritance*. Edited by R. A. Fisher, F.R.S. Volume IV: *Nervous Diseases and Muscular Dystrophies*. Part III: *On Hereditary Ataxia and Spastic Paraplegia*. By Julia Bell, M.A., F.R.C.P., assisted by E. Arnold Carmichael, M.B., F.R.C.P. (Pp. 282. 17s. 6d. net.) Cambridge University Press.

one of several genes may be responsible in the dominant and recessive cases too. Although the three clinical types cannot be sharply distinguished there is a genetic distinction, for there is a strong tendency for members of the same family group to exhibit the same variety of the disease. It is also shown that the tendency for the age of onset to be the same in members of the same family is very strong indeed. Furthermore, abortive cases occur, though they are rare; it is found that they tend to arise in particular families. Miss Bell emphasizes chiefly modification of the effect of a main gene as the probable explanation of these phenomena. It is, however, possible that some at least of these effects are due to the fact that any one of several genes, with slightly different effects, may be operating in different families. Such genes might be independent or else they might form a series of multiple allelomorphs. The personal investigation serves the valuable purpose of checking results based on the collection from the literature, but also provides information of great importance. Little is said about these results, but we are promised a detailed analysis in a forthcoming publication. It will be awaited with much interest.

ALMONERS IN WOMEN'S V.D. CLINICS

Two of the greatest difficulties in the management of venereal disease are the prevention of defaulting and the tracing of contacts. In those countries where compulsory methods are legal—for example, in France and certain American States—powers can be exercised to bring patients back to treatment and to examine those who are suspected of transmitting their disease to others; in this country, however, such action can only take the form of persuasion. Few will deny that a lady almoner should be invaluable in a V.D. clinic, but the system does not work so easily in practice; a large clinic open all and every day with considerable numbers of new patients can provide work for a whole-time almoner, but actually most of the clinics of this country are scattered, numerous, comparatively small, and usually only part-time, so that not only would an almoner not find full-time occupation but the cost would be prohibitive. The training of an almoner is long and arduous, and infinite patience, tact, and experience are required; voluntary workers are, for these reasons, almost entirely ruled out. It has been suggested that several clinics in a particular area could combine to employ one worker, but even so the scheme would only be practicable where the times of opening did not overlap. The duties of an almoner are limited to some extent by our legal system: she can interview patients, help them in many of their difficulties, persuade them to carry out the prescribed treatment, and induce them to try to bring all contacts up for examination; but she can do little herself in the case of contacts, and any attempt to approach these directly is liable to lead to undesirable repercussions. The scope of a lady almoner's work is well set out in a little book[1] which has been reviewed in this *Journal*.[2] It appears, therefore, that although theoretically such a system has much to recommend it, the practical difficulties are almost insuperable—at all events so far as most of the smaller clinics are concerned. Where a clinic is attached to a hospital already employing almoners one of these ladies could do part-time work in the V.D. department, and be of the greatest assistance to the medical officer in charge. On the other hand, statistics do not indicate that in the few clinics where almoners are employed there is any great diminution in the defaulter rate; such a statement casts no aspersions on the ability of these indispensable ladies, but serves to indicate the extent to which their hands are tied by the existing legal system. If medical officers of V.D. clinics would air their views on the subject the authorities and the public would know whether there is any general demand for social workers in this service; that they can be, and are, of the greatest assistance to both doctor and patient is indisputable, and it should not be beyond the wit of man to devise some scheme whereby they could be employed in the more important, if not all of the, V.D. clinics of this country.

[1] Manchée, Dorothy. *Social Service in the Clinic for Venereal Diseases.* 1938. London: Baillière, Tindall and Cox.
[2] *British Medical Journal*, 1939, **1**, 391.

PULMONARY TUBERCULOSIS IN DENMARK

Tuberculosis mortality is continually being examined statistically, but the same cannot be said of tuberculosis morbidity. The reason for this may be that at present the incidence of active tuberculosis can be assessed only on figures obtained from compulsory notification, a relatively recent measure associated with obvious errors. Marie Lindhardt's[1] careful statistical investigation of 40,000 fresh notifications of pulmonary or laryngeal tuberculosis in Denmark during the period 1924 to 1934, during which time there were 20,000 deaths from the disease, is therefore of considerable interest. The author was able to satisfy herself that the Danish system of notification was quite effective. According to the Danish Tuberculosis Act of 1905, which is still in force, only cases of pulmonary tuberculosis have to be notified; but in regard to deaths, all forms of tuberculosis must be notified on a separate certificate, distinct from the general death certificate. The total morbidity during the period was 11.1 per 10,000 of the population, and the mortality 5.7, representing 5.2% of all deaths. During the two quinquennia 1925 to 1929 and 1930 to 1934 the morbidity fell by 15% and the mortality by 19%. The incidence of tuberculosis was not only higher in towns but increased with the size of the town. Although morbidity and mortality were higher among females than among males, the decrease in both in the decade was greater among females, especially in the age group 15 to 24. The decrease in the mortality among males was present in the group 65 years and over. The average duration of life after notification in fatal cases was 14.3 months for males and 12.9 months for females, the longest period being found in the age group 15 to 29. Of all deaths in males and females in the decade three-fourths occurred on an average eighteen months after notification. Morbidity and mortality were found to be lower among male farm workers than among men in other occupations; particularly high figures were recorded for employees in the hotel and restaurant business and for seamen. Among medical students and young physicians the mortality was one-half higher than the average.

PROTEIN IN BERLIN

Some years ago the late General Karmann, chief of the German Army Welfare Department, remarked to Prof. A. Bickel that the coming war would in no small measure be a war for protein. Prof. Bickel has therefore recorded a series of metabolism experiments[2] carried out during the winter of 1939–40 in Berlin to discover if the protein available was satisfactory in quality and quantity. He

[1] *The Statistics of Pulmonary Tuberculosis in Denmark, 1925–1934.* A Statistical Investigation on the Occurrence of Pulmonary Tuberculosis, worked out on the Basis of the Danish National Health Service File of Notified Cases and of Deaths. By Marie Lindhardt. Copenhagen: Ejnar Munksgaard.
[2] *Dtsch. med. Wschr.*, 1940, **66**, 393, 423.

bases his results mainly upon a complicated analysis of the urine, and an estimate of the protein intake. The subjects were for the most part medical students or doctors living with their families, in boarding-houses, or in hospitals, and the experiments dealt solely with the normal diet of the normal civil population. A careful distinction is made between the first-class protein from, for example, milk, eggs, cheese, meat, and fish, and the second-class protein from carrots, potatoes, and leguminous vegetables. It is pointed out that the rationed foodstuffs in Germany give the same quantity of protein to every individual irrespective of the body weight, and that the non-rationed food available, while supplying missing calories according to the individual needs, is relatively poor in protein. This fact accounts for wide differences in the amount of protein consumed per unit of weight by the experimental subjects, but the average during the experimental period lay between 0.9 and 1.0 gramme per kilogramme body weight. It is asserted from the evidence that there was no deterioration in the protein intake during the winter of 1939–40 in Berlin, and, indeed, from the middle of December to March the results suggested that the proportion of first-class to second-class protein in the diets was actually increased, so that from a qualitative point of view the protein situation improved. According to Prof. Bickel, therefore, the Allied blockade of Germany had no unfavourable influence on the quality or quantity of the protein food available for the German people in the winter of 1939–40. The standard ration of 60 to 70 grammes of protein per person per day is considered quite satisfactory for the civil population. In a concluding paragraph, however, it would appear that Prof. Bickel is not quite so confident that there is a margin of safety in such a ration as regards the amount of animal protein available, for he quotes with approval an order by Goering issued in the middle of February, 1940 (despite the improvement in quality of protein which the metabolism experiments were then revealing), to provide for a better output from the bacon and milk industries. This is, however, stressed rather for its provision of more fat than of more protein for the population.

MENTAL WELFARE DURING WARTIME

The Central Association of Mental Welfare has just completed a quarter of a century of existence. It was at the outset of its career in 1914 when the last war broke out, and for a time its continuance was uncertain. But by the time that war ended forty-five new voluntary associations had been established, with 11,000 mental defectives on their registers, and training courses for teachers of mentally defective children had become an annual institution. No wonder, therefore, that the Association faces the present situation undaunted. Although some may despair of social progress and fear that many hard-won achievements of the past will be swept aside, it declares its belief that the outcome may be a new realization of the significance of mental health. The exigencies and sufferings with which the community is faced will, moreover, demonstrate as never before the urgent need for establishing a unified mental health service on the lines indicated in the Feversham Report. In token of its faith the association draws attention, in its twenty-fifth annual report, to a number of vigorous new departures. One is the organization of a refresher course and of a mental testing course for teachers. Another is the institution of a diploma course for occupation centre workers, and the appointment of a committee to consider matters connected with such centres and the training of workers. In co-operation with other organizations there has been established a mental health emergency committee to function as a central body concerned with mental health work in time of war. Its first activity was to secure the recognition of social service in mental health as a reserved occupation in the Government schedule, and it is doing its utmost to ensure that such service shall be not merely maintained but extended during a period when the need for it is more than ever acute. Among much other useful work the association deals with many hundreds of cases referred to it for advice and help by local authorities and other bodies, and the comment is made that the services of the association are now being chiefly used for placing the more difficult type of defective as compared with the relatively simple cases of a few years ago. Uncertified cases received from public assistance committees are usually very difficult to place. For the most part they are slightly subnormal, and to mental inferiority there is often added an unstable temperament. Nevertheless, the value of a period of special supervision is shown by the fact that most cases ultimately succeed in becoming self-supporting.

THE CAUSE OF APPENDICITIS

Recent clinical and experimental work on the cause of appendicitis stresses the mechanical aspects associated with obstruction of the lumen and minimizes the importance of bacterial infection. Bowers,[1] for example, has shown in a series of 485 cases of appendicitis that there was an obstructive basis in 80 per cent., and that in 67 per cent. the obstruction was due to an impacted faecolith (not mere inspissated faeces). Many other recent workers have also stressed this clinical feature in acute appendicitis. Other causes of obstruction may be inspissated faeces, parasites, organic strictures, congenital kinks, or spasmodic conditions. A "closed-loop" type of obstruction is thus brought about in a diverticulum of the alimentary canal. The response to appendicular obstruction is an exaggeration of normal appendicular secretion. The resulting distension of the organ leads to thinning of its walls, congestion, local thrombosis, diamond-shaped infarcts on the anti-mesenteric border, haemorrhage, ulceration of the thinned mucosa, and perforation of the damaged wall if the obstruction cannot be overcome. Infection of the appendicular wall takes place, but this is a secondary process which follows the obstruction. On the experimental side Wangensteen and Dennis[2] have confirmed this view of the mechanical origin of appendicitis. They had previously demonstrated the secretory function of the appendix. In recent experiments with the human exteriorized appendix they demonstrated the degree of this secretory pressure manometrically. In some cases this pressure was almost equal to the systolic blood pressure; in others, again, the pressure was much lower; and in a few there was an entire absence of secretion. The more normal the appendicular epithelium the greater is the secretory response. These workers also demonstrated in apes the development of a typical acute appendicitis after exteriorization of the appendix and ligature of its base. These two papers thus stress the importance of appendicular obstruction and secretory response as factors leading to appendicitis, and both suggest that "acute appendicular obstruction" is a more accurate description of the pathological process. In view of the frequency with which appendicular concretions are the obstructing agents it is important that the conditions which predispose to their formation should be accurately determined.

[1] *Arch. Surg.*, 1939, **39**, 362.
[2] *Ann. Surg.*, 1939, **110**, 629.

COLLECTIVE TRAINING AT AN AID POST

Aid posts, the utility of which was questioned when they first became part of the casualty services, have come to stay, and although many of them have not yet been tested in the actual emergency, their value is being generally recognized. Most of the casualties which are brought to the aid posts will be walking or sitting cases, but some will be on stretchers, and in respect of all these the post will act as a "buffer" between the streets where the injuries are received and the "casualty" hospital. It will be a clearing station in the front line, and it is self-evident that the training of its personnel should be as complete as possible and its efficiency and resourcefulness maintained at the highest level.

We have been allowed to examine the programme of instruction, extending over a month, at one of the London aid posts. The name and location of the post, for some reason which is obscure to the non-official mind, must be kept secret, but this post is fortunate enough to have as its medical officer a distinguished surgeon who served in the last war. The personnel under training includes, on the female side, State-registered and V.A.D. nurses, casualty clerks, storekeepers, telephonists, runners, and the rest-room matron; on the male side, stretcher-bearers and orderlies, and, either male or female, registrars, the purser, "gas" workers, and, finally, medical practitioners.

A programme for a typical day when the instructors were themselves members of the staff is as follows:

Time	Instructor	Subject
11.30 a.m.	Sister C.	District nursing
2.0 p.m.	Sister W.	Treatment and dressing of burns
4.30 p.m.	Mr. E.	Types of casualties
9.30 p.m.	Qr.-M. M.	Arrest of haemorrhage
11.30 p.m.	Qr.-M. M.	Subject at request of sister on duty

On the following day when one or two outside instructors were brought in the programme ran:

10.0 a.m.	Mr. E.	Synovitis
2.0 p.m.	Dr. W.	Injuries to the eye
6.0 p.m.	Dr. O.	Drugs
9.30 p.m.	Mr. D.	Fire drill
11.30 p.m.	Qr.-M. M.	Thomas splint

The last item is always after 11 p.m., when the quartermaster—evidently a many-sided man—gives instruction in methods of carrying, first aid, fitting respirators, bandaging, loading and unloading the ambulance, stretcher drill, and so on.

Realistic Casualties

On one day a fortnight, or preferably once a week, and at various hours, including midnight and early morning, there is a full collective exercise in which all types of personnel are included. Persons sometimes up to the number of twenty are enlisted to act as dummies for casualties. The types of casualty are various, but are such as are likely to be produced by war conditions, especially air bombing. Here are some of the listed "casualties" for one particular occasion:

A coil of rope has caught this man around his neck. What structures may be injured?

This woman has had her left foot badly wrenched when it was extracted from between railings.

There is a severe deep cut above and behind this man's right eye.

There is a wound at the inner ankle with profuse bleeding.

Some acid from an electric torch has been spilled over the back of the left hand.

You suspect that this man has a fracture of the thoracic spine. What complications may there be?

This man fell into one of the cold-water tanks and is much shocked.

On some occasions carefully faked and therefore very realistic "casualties" are included, such as open fractures. The prescribed ritual is followed just as if bombs had fallen in the neighbourhood, and first-aid parties and walking cases were already at the door. The "casualties," after rapid sorting, are dealt with in the treatment rooms by the nurses on duty with the help of a fully trained nurse or a medical practitioner, or both. After treatment they are taken to the rest-room and remain there until the "all clear" is sounded or still longer if necessary, and after full registration they are "cleared," all of them with their casualty label attached, either to their own homes, where they are seen by their medical practitioner, or to a base hospital, or (generally only cases requiring immediate or early operation) to the casualty hospital. Careful training and assignment of duty in the filling in of forms is regarded as an essential part of the procedure. In "gas" exercises the training consists in the preparation of the department, the dressing and undressing of personnel in protective clothing, the reception and treatment of gas "casualties," including emergency first aid, and the distribution of clean clothing.

Special Training

Part collective training is also undertaken for certain sections of the personnel, such as special training for the nursing staff. Among what may be called the post-certificate talks and demonstrations to nurses we notice such subjects as "comparison of both sides," "fright," "psychological surroundings of a surgical patient," and a "shock corner." Again, there is special training for stretcher-bearers and other orderlies, the latter including general aid-post duties on reception of the "yellow" warning, such as manning of doors, preparation of the emergency lamps, placing of equipment at the entrance for gas casualties, and the getting ready of stretchers and wheel chairs. Special instruction for the members of the medical staff is given by the medical officer in charge, and includes the selection for priority of treatment among the casualties on arrival, the choice of place to which the various casualties should be cleared, and the technique of giving, in turn, special training to other members of the personnel. The importance of the full and accurate filling in of the M.P.C.46 label by the medical officer and the casualty clerk is constantly stressed, because it is only by this means that proper details of a casualty will reach the Ministry of Pensions.

At this particular aid post the subjects of the talks and demonstrations stretch out almost to infinity. One list of more than forty subjects includes the effect of explosives on the ears, head injuries, the use of lotions, the administration of medicines, rectal feeding, preparation of dressings, and *x*-ray examination of fractures and for foreign bodies.

Up-to-the-minute Rehearsal

Altogether the life at this aid post is a constant unwearied rehearsal for the ghastly drama that may one day be rung up. It is unwearied because of the careful planning and the variety of the subjects and incidents. To the staff at this particular post everything that has to do with emergency must now be second nature. One does not know if the organization is worked out as fully at the very many other aid posts in London and all over the country. But by this means a very large number of lay people are becoming unafraid and capable in dealing with casualties of every description, and this will have its permanent result in ensuring for the medical profession in the future a better-instructed and more helpful lay community.

The Ministry of Health, in agreement with the War Office, has asked the War Organization of the British Red Cross and the Order of St. John to provide and equip convalescent homes for non-commissioned officers and other ranks of the Army. The immediate aim is to provide 10,000 beds, each home accommodating between fifty and 100 beds. Private houses will be adapted and equipped in various parts of England and Wales. A number of houses have already been offered by their owners. The work of opening and maintaining the convalescent homes will be carried out by the Joint County Committees of the Red Cross and St. John War Organization. Arrangements for convalescent hospitals for officers have been made with the War Organization by the War Office.

IMPROVED QUALITY OF BREAD

HIGHER EXTRACTION FLOUR

The Medical Research Council has issued the following statement on the advantages of bread made from flour of higher extraction than at present in use.

The Accessory Food Factors Committee of the Lister Institute and Medical Research Council has examined the ways in which the health of the people of Great Britain might be benefited by improving the nutritive value of the wheaten bread which they eat, and is able, in consequence, to make certain recommendations:

Recommendation I: Flour for the bread of the people should contain the germ of the wheat grain, as much as possible of the aleuron layer, and the finer portions of the bran. Instead of flour consisting of about 70% of the wheat grain, as it does at present, the percentage extracted should be at least 80 to 85%.

By this means the content of certain vitamins, of all minerals, and of fat would be increased, and the nutritive value of the protein would be improved. The degree to which such an increase would benefit individuals would naturally depend on the extent to which they were consumers of bread. The largest amounts of bread are eaten by those whose small incomes limit their power to purchase the protective foods. Any improvement in the nutritive value of bread would therefore affect in the highest degree those most in need of it. If 1 lb. of bread a day is taken as the average amount consumed by an adult manual labourer, a rough basis is provided for calculating the benefit which small-income dietaries would derive by a change from a flour of 70% to one of 80% extraction.

Vitamins

Vitamin B Complex.—The minimum daily requirement of vitamin B_1 for the ordinary adult is from 300 to 500 international units, and is almost directly proportional to the intake of carbohydrate. Carbohydrate constitutes at least two-thirds of the nutrients in bread, and the intake is therefore very large in those who eat much bread. The 1-lb. loaf made from white flour of about 70% extraction gives from 80 to 160 I.U. vitamin B_1, while that made from flour of 80 to 85% extraction would give 300 to 450 I.U., an amount almost satisfying the total requirement. The Accessory Food Factors Committee is of the opinion that the change in this one dietary essential alone would benefit greatly the health of adults and children of all classes in Great Britain. The content of other members of the vitamin B complex, such as riboflavin, would also be greater in the browner flour, but knowledge on this subject is less exact than for vitamin B_1.

Fat and Fat-soluble Vitamins.—A change from 70% to 80 or 85% extraction flour would, by including the germ, substantially increase the quantity of vitamin E and of fat of high linoleic acid content. Knowledge is at present not sufficient to show whether these contributions would be of important advantage to the population of the British Isles, but the presumption that they would be is strong. Clinical evidence exists pointing to the value of vitamin E in human diets.

Carotene (Provitamin A).—The carotene content of the flour would not be greatly enhanced because this provitamin is distributed throughout the grain, and is present in small amounts in 70% flour if not previously destroyed by bleaching. If the flour has been bleached the whole of the carotene may have been destroyed together with certain of the other nutritive elements—riboflavin, vitamin E, and linoleic acid. The Accessory Food Factors Committee therefore puts forward a second recommendation as follows:

Recommendation II: The bleaching or improving of flour by the use of oxidizing agents, such as nitrogen chloride, nitrogen peroxide, chlorates, bromates, chlorine peroxide, or by any other process which damages the nutritive value of the flour, should be prohibited.

Minerals

The total mineral content would be about doubled.

Iron.—The human daily requirement of iron may be taken as 10 mg. The 1-lb. loaf of 70% flour would supply about 5 mg., and by the change to flour of 80 to 85% extraction this amount would be doubled and the whole daily requirement of iron would be realized in the bread portion of the diet alone. Anaemia from iron deficiency is a common cause of lowered vitality among poorer women, particularly in pregnancy, and among their infants.

Calcium.—The minimum human daily requirement of calcium may be taken as 500 mg. The 1-lb. loaf of 70% flour would contain somewhat less than 100 mg., and the loaf of 80 to 85% flour would contain somewhat less than 150 mg. An insufficiency of calcium is an important defect in human diets in Great Britain, but it would not be adequately counteracted by increasing the extraction of the flour for bread. Bread is in any case a poor source of calcium; the ordinary foods most rich in calcium are milk and cheese and green vegetables, and every effort should be made to increase the production and consumption of them. The question is further discussed below.

Phosphorus.—The increase in phosphorus would also be very great, but as it is not believed that human diets in Great Britain are apt to be deficient in this element stress is not laid on this point.

Other Minerals (Potassium, Magnesium, Manganese, Copper, Zinc).—The fact that other mineral elements would be similarly increased is indisputable, but knowledge of the magnitude of the human requirement for these or of the extent to which it is met in ordinary diets is not yet adequate for assessing the extent of the advantage.

Possible Disadvantages resulting from Increase in the Extraction of Flour

(*a*) *Reduced Utilization.*—Flours of high extraction, if coarsely ground, are slightly less well utilized than finer flour. It is partly for this reason that an extraction of 80 to 85% has been selected, because it represents a fraction of the wheat grain in which the improvement in the nutritive value of the flour is pronounced but in which the decrease in utilization has scarcely begun. This lessened utilization is probably due to the coarseness of the bran particles; if a flour of 90% or even 100% extraction could be obtained in a finely ground and homogeneous condition the nutritive advantages listed above would be still further enhanced and the disadvantages of incomplete utilization would tend to disappear. There is little substantial evidence to support the belief that bread made from flour of high extraction exerts a harmful irritating effect on normal persons. Where substantiated the effect is probably due to the coarseness of the bran particles. In most cases the slight laxative effect of wholemeal or high-extraction flour might be found beneficial.

(*b*) *Increase in Content of Phytic Acid.*—Phytic acid precipitates calcium so that it cannot be absorbed. Although high-extraction flour contributes more calcium to the diet it also contributes more compounds of phytic acid. The need for more calcium in the diet in Great Britain is great, and bread, whether made from white flour or flour of higher extraction, must be regarded as a poor source of calcium. The Accessory Food Factors Committee therefore makes a third recommendation:

Recommendation III.—The public would be benefited by the addition of calcium salts to the flour from which bread is made. Bread made from flour thus supplemented should be specially designated. The production and consumption of milk, cheese, and vegetables should at the same time be promoted to the maximum extent, in order to secure an adequate supply of calcium.

Use of Alkaline Baking Powder.—The use of baking powder, which produces alkaline conditions, destroys the vitamin B_1 content of bread, whether made from brown or white flour. The following recommendation is therefore made:

Recommendation IV: The use of baking powders, which produce alkaline conditions, should be strongly discouraged in making bread or biscuits.

Reports of Societies

INFECTIVE PROCESSES AND MENTAL ILLNESS

In his presidential address to the ninety-ninth annual meeting of the Royal Medico-Psychological Association, held in London on July 24, Dr. T. C. GRAVES, medical superintendent of the Rubery and Hollymoor Mental Hospitals, Birmingham, explored the theory of a common causal bond between mental illnesses and the bodily disease entities with which they are so often associated, thus going over some of the ground covered by him in the paper published in the *British Medical Journal* of April 13, 1940, under the heading "The Common Cause in the Functional Insanities." He said that he believed this basal common cause to be a residuum left by an acute infective process associated with which there may have been emotional symptoms preceding, accompanying, or following the main physical symptoms. This residuum might be quiescent and latent, but, developing as a chronic infective process, it might continue to trouble the instinctive and emotional life of the patient and reduce his intellectual efficiency.

Treatment, Dr. Graves continued, should not be confined to the isolated use of one agent; all agents which had been shown to have any healing effect in any part of the psychiatric field should be used in their proper place. One important consideration was that an agent beneficial in conditions of open sepsis was harmful in conditions of closed sepsis; failure to recognize this principle accounted for the divergent results obtained by different observers. Agents which stimulated healing in infective conditions did so largely by increasing the vascularity of the lesion, bringing fresh reserves of immune bodies to combat any persistent infective process. In open sepsis the discharges resulting from such increased vascularity escaped, the potential toxaemia and bacteriaemia were reduced, and there was a gain in mental efficiency. But in closed sepsis the effect of increased vascularity was to enhance the toxaemia and bacteriaemia, thus exacerbating any state of disease or secondary stress.

Shock Treatments

In discussing shock treatments, he said that these were the modern counterparts of many crude procedures long since out of date which had had the effect of stimulating the autonomic-endocrine mechanism by exogenous action. The mode of action of these shock treatments was by means of a diphasic vascular variation reaction, and they were only therapeutically effective in conditions of open sepsis. There appeared to be no unanimity of opinion that shock methods were at all specific for any form of mental illness. A diphasic vascular change was exactly what happened at the time of the initial infection from which the common cause had been left as an unresolved persisting disease area. Therefore if these circulatory stimulants, whether in plenary or subplenary doses, were to attain their maximum effect they were much more likely to do so when the tissues on which they acted were not hampered with a toxic state. If the agent did shorten the remote effect of the common cause, such as a mental illness, it did so by renewing those changes which were incomplete at the time of the cessation of the original symptoms of the acute infection. If the healing processes thus renewed were to yield their best local and remote effects they would do so when as much as possible of the stubbornly persisting infection which had already been isolated and surrounded had been removed. He begged that the conception of "shock" as a therapeutic measure should cease; "diphasic vascular variation" was an alternative label, cumbersome but explanatory. Non-specific protein intravenous treatment, which could be regarded as causing shock, though devoid of curative action in closed sepsis, was highly curative with open sepsis. Insulin and cardiazol could be used more effectively in subplenary doses when the sepsis had been dealt with, but if this detoxication procedure was not carried out "shock" treatment must reactivate any infective, latent, and cryptic disease by the vascular disturbances it set up. If the areas of infective disease had not first been removed there would be some grounds for the accusation, already made in the case of insulin, that the use of these agents in wartime was merely wasteful. Put in simple language, it was equivalent to driving an engine with both the accelerator and the brakes full on. The machinery suffered and there was no progress.

Correspondence

National Homesteads for Young Mothers and Infants

SIR,—Following upon your annotation on the work of the experimental Health Centre at Peckham (July 13, p. 60), may I plead with you to exert your influence with those who advise the Government, so that something may be done to preserve the treasure for which we are fighting. The history of freedom in England focuses itself particularly upon our social services, first conceived and consolidated by Chadwick, the great hygienist. The list of men in our own profession who have given their lives to create a high standard of hygiene in these islands has made England the model for the world. Would it not be well, then, to preserve the young life of this country so far as possible from the exigencies and threats of war? Would it not be well to take the young mothers and young infants from every centre of turmoil and disperse them in the country in what we might call homesteads? Would it not be well that these young mothers should devote the whole of their energies and their attention, after the disruption of their homes and the departure of their husbands, towards the preservation of the health of the young progeny of our unknown warriors?

The practical aspects of this procedure are:

The establishment of homesteads run entirely by such young mothers for the benefit of the health of their children. By direct experiment we have established that the homesteads should consist of some twenty-five young mothers with their accompanying thirty-five to forty children. Each should comprise forty to fifty acres of land. It should be stocked with ten tuberculin-tested dairy cows and some seventy-five chickens, twenty geese and ducks, and four to five pigs. There should be four to five acres of kitchen garden and about twelve acres arable, the rest pasture. A survey of England will disclose that many thousands of residential holdings of the rich meet these requirements and at the moment are not in full production.

The advantages that accrue from the scheme are:

1. That the health for which the social services of England have struggled so hard can be preserved through the devotion not of paid and trained helpers as hitherto but of these young mothers themselves. Is not this the ideal that every medical officer of health strives for in his welfare services?

2. That the young mothers learn of food production and of dietetics through practical management of their own homesteads. From experience already gained on one such homestead we know they see the health of their children grow and expand in these circumstances.

3. They learn the essentials of practical hygiene and nutrition from the procedures followed in modern cow-herding, milking, butter-making, care of poultry, etc., to say nothing of the garden and soil hygiene.

4. They learn homestead economy, making their own fruit into jam. A pea-pod grown with so much care by themselves is looked at twice before it is thrown away: in a homestead it becomes soup, and so on. They learn there is nothing that is waste. What they grow they eat: we all know the peculiar flavour our own labour lends to all things—and so they get back to making the children's clothes.

5. For the first time in public hygiene, visiting welfare advisers carrying on ante-natal and child welfare in a series of homesteads would meet the people in their social conditions and find a response undreamt of under clinic conditions.

Drawn from actual experience with the homestead connected with the Pioneer Health Centre, here is a conservative forecast of what each of these homesteads should produce:

From the Stock.—7,000 gallons milk, 250 lb. butter, 10 calves, 30 geese, 100 geese eggs, 40 ducks, 100 duck eggs, 14,000 hens' eggs, per annum.

From the Kitchen Garden.—40 lb. of vegetables daily: fresh in the summer, or by storage and preservation for winter consumption. These include the maximum variety in peas, beans, carrots, parsnips, turnips, beetroots, artichokes, seakale, celeriac, leeks, onions, cabbage, cauliflower, marrows, sprouts, spinach, lettuce, endive, chicory, tomatoes, cucumber, mustard, cress, etc. Soft fruits, besides providing for fifty persons a day in the summer, yield 700 lb. of jam, and bottled fruit for winter consumption.

From the Land.—Enough hay, ensilage of roots, kale, etc., for winter and summer feed for the stock. Cereals, 11 acres: oats and wheat for human consumption as well as for stock.

It is to be noted that the results of this productive effort are consumed at the *site of production*, so that the amount of petrol, transport, labour, paper wrappings, bottles, and many other things so essential to defeat the enemy are saved by the nation through this method of consumption. This saving alone would more than compensate for any expense that might be incurred in the setting up of national family homesteads.

Here is a further aspect of the forecast. It is impossible in agricultural production to predict results accurately, and any over-production on these homesteads will go very largely to meet the overhead charges to the nation that a natural homestead scheme would involve. But these are not the assets or the profits that the medical profession must seek. The profits we seek are, first, to achieve for the young family the best possible circumstances—indeed, the only possible circumstances—in war: namely, dispersion in the relative peacefulness of the country; to preserve and continue the good results of the millions of pounds that have been spent to build up a healthy infancy and childhood for this nation of ours.

The alternative to this scheme is already before the public—namely, to construct nurseries and crèches deliberately, with hurriedly trained virgins to look after the infants and young children of mothers compelled, because they happen to live in the vicinity of munition works, to help in the only way so far open to them—the productive effort for the war.

Even though a homestead scheme were to do no more than provide the best possible preventive action against the threats of war as they affect infancy and maternity, it would be worth while. But the fact is that such homesteads could be the nuclei of a real effort at something better than prevention—the deliberate cultivation of the health of the children and the real practical education of the young mothers of the nation.—I am, etc.,

GEO. SCOTT WILLIAMSON, M.D.

Bromley Common, Kent, July 23.

Health and Soil

SIR,—Some fifty years ago, when a medical student, I read a book by Dr. Vivian Poore called *Rural Hygiene*, and was much interested. Some twelve years ago I bought a house and three acres in Rutland, the heart of rural England. Never having lived anywhere but in a large town, and being faced with rural sanitary difficulties, I remembered the book and with great difficulty got a copy of it.

"Humus heaps" are described in the book and their value stressed, so I started one in my garden, using wire netting three feet high to surround a circle of the diameter of about four feet. In this circle I had put *all* vegetable, garden, and household refuse (I allowed no bonfires except for wooden twigs). When the heap was about five feet high I put on a few spadefuls of surface earth and left the heap for six to twelve months to mature. The result was most perfect leaf mould, which was dug into the vegetable garden and flower beds. During these twelve years I have never bought any manure or fertilizers or done any spraying; and the crops have improved each year and are now the best in the village.

I am now experimenting with the disposal of surgical dressings from the wards of a hospital of 600 beds. Instead of putting the dressings in an incinerator I am having them put in layers, between green vegetable matter layers, on humus mounds fifteen feet long by five feet wide. It looks as though this too will be very satisfactory. I find that the temperature of humus heaps remains at about 40° C. (104° F.) where disintegration is active at about fifteen inches from the surface.

Dr. Poore also described a "dry earth closet" for rural houses, the principle being to separate the fluid urine from the solid faeces at the time the closet is being used. This is effected by having a chamber of concrete slabs whose floor slopes down to a drain at the lowest point. A pad of hay receives the solid faeces and this is covered by a tablespoonful of very dry earth dust. The urine is received from the drain on a small patch of ground, which should be forked over about once a fortnight. A spade and rake removes the hay and faeces when clearing the closet out, and this goes on the humus dump. There is never any smell—and the removal of a filthy bucket of urine and faeces is avoided. I have, for demonstration purposes, allowed three months to elapse before clearing out, and still there is no smell.

Sir Albert Howard's work has carried Dr. Poore's a stage further by more scientific investigation of Nature's principles. Dr. Poore was fifty years before his time, and there still is much to be done to convince the conservative agricultural mind how simply and beneficially these Nature's methods may be applied.

I have met with fearful opposition, but now have converted many. Dr. L. J. Picton is to be congratulated for drawing the attention to these matters of members of the medical profession.—I am, etc.,

Leicester, July 28. ASTLEY V. CLARKE, M.D.

The Problem of Noise

SIR,—For some years Lord Horder and the Anti-Noise League concerned themselves with the harmful effects on the community of the increasing noise in modern life, and how to combat it. The abolition of the use of motor horns and whistling for taxis after 11 p.m. was one of the results obtained. I ventured then to suggest that, beyond a point, noises had come to stay, and the psychological side of the problem should be stressed. Our nerve control should be strengthened. Instead of saying, "This noise drives me crazy," we should school ourselves to ignore it as far as possible—in other words, apply "nerve stops."

Now, of course, the problem has become more than a nuisance; it is a national danger, and has forced itself on the military, the industrial, and the civilian attention in a very serious and acute form owing to its effects on the morale, on the nerves, on the health and efficiency. The lesser forms of noise we still can do something to control by will power. The more serious, resulting from gun fire, explosions, screaming bombs, factory noises, etc., must be countered immediately and seriously by the Services, the civil authorities, the factories, and the civilians themselves. Our profession, especially our research councils, should make themselves and their views heard in no uncertain way, and not leave it to the publicists to direct and deal with this grave matter. The Industrial Health Research Board, as a result of its researches, has established that excessive noises have lowered the mechanical output in certain works by at least 3%. The remedies proposed are many, and it is certain a solution is practicable and simple, but a strong lead and direction from the right quarters should be made, and at once, as to what should be done and what kind of appliances should be used. Is it not desirable that it should be indicated on professional authority that certain requirements for ear protectors are essential? For instance, that they should be an effective protection of the ear against loud noises, blast, and explosions, while permitting ordinary sound to be heard, harmless for the lining of the ear, easily retained in the ear, and wearable at night when sleeping, not unsightly, easily kept aseptic, portable, and durable.—I am, etc.,

London, S.W.3, July 27. REDMOND ROCHE.

Treatment of Gas Gangrene

SIR,—In expressing my full agreement with the plea made by Mr. John Hosford (June 29, p. 1068) and Mr. Jocelyn Swan (July 20, p. 98) that the term "gas gangrene" should be reserved for the serious cases only (Classes 1 and 2 below), perhaps some notes, made at the time, of my experience in a base hospital in France in the last war may be of interest. We distinguished clinically four types of infection with gas-forming organisms:

1. *Acute Fulminating Gas Gangrene.*—This was always comparatively rare and became less common as the war went on.

In 1917–18 we had twenty-one cases; unfortunately I have no statistics for earlier years, but on one day alone in the Somme battle of 1916 I did seven amputations for this condition. These twenty-one cases had complete gangrene of the whole limb—almost always the leg. In a typical case one has, let us say, a small shell wound transversely through the calf, injuring the posterior tibial artery; owing to the small wounds and the haemorrhage the circulation is already impeded, and the rapid septic and gaseous swelling increases the tension and hastens the onset of gangrene. The limb is white, oedematous, cold, tensely swollen, and resonant to percussion like a drum. The foot and ankle are bluish-black with large blebs on the surface; the superficial veins are thrombosed and enlarged, standing out on the white leg like the veins in marble; and both thrombosis and superficial emphysema extend above the obvious gangrenous limit. Bubbles of gas are coming out of the wounds, and the whole limb has a characteristic and peculiarly offensive odour. Amputation has to be performed well above the segment implicated, though it is not necessary to go above the limit of subcutaneous emphysema. The cut surface of muscle must bleed freely; if it is a bright brick-red colour and does not contract or bleed on section, one must go higher.

The rapidity of development and spread is remarkable. On one occasion I examined a wound of the ankle especially for signs of gas and failed to find any; three hours later the leg as far as the knee was in the condition just described. I believe that in this type of case there is always injury to, or thrombosis of, a main arterial trunk. In our cases—and it seems to have been the same in Mr. Swan's—the finishing touch appeared to be given by transport to the base, as the great majority were either admitted with the condition already developed or it came on within twenty-four hours.

We never did a guillotine operation, and after a short experience of turning the flaps back and leaving the wound open we abandoned that method also, as the shock was too severe. We simply packed the wound with gauze soaked in flavine and secured in position with two sutures, and in a very large proportion were able to close the wound in three or four days by delayed primary suture.

2. *Massive Gas Gangrene of Muscle.*—In many cases the gangrenous process is more or less limited to one muscle or group of muscles, and if not too extensive can be satisfactorily treated by excision of the affected part, cutting away all the dead muscle until a freely bleeding surface is everywhere obtained. On one occasion I had a case limited to the infraspinatus, and I removed the muscle in a semi-liquid and disorganized state by simply wiping it off the scapula with a sponge, leaving the bone as bare as a skeleton. These patients, though not so desperately ill as the fulminating cases, are usually in a profoundly toxic state, and will certainly be helped, as Mr. Swan suggests, by a combination of serum and sulphanilamide. If there is much development of gas in the deep fascial planes deep *x*-ray therapy is worth a trial; it proved very successful in one case I had following a motor injury.

3. *Gas Abscess.*—This was quite common, and one often met with gas bubbling out of a wound where the foreign body was situated in a gas-containing abscess. This is of no great moment, even if there is an area of emphysema round it, and free drainage is always satisfactory. One exception must be made: if it is associated with a wound of the rectum and spreads widely in the buttock it will almost always prove fatal.

4. *Subcutaneous Gas Infection.*—Here there is simply a development of gas in the subcutaneous tissues without involvement of the whole limb. These cases do perfectly well with multiple small superficial incisions, dealing, of course, adequately with the original wound. I had one case of gunshot wound of the knee-joint which had this superficial gas emphysema from ankle to hip. I removed the foreign body, washed out the joint, closed it completely in layers, made superficial incisions up and down the leg, and the joint healed by first intention.

These last two classes of gas infection are much the commonest and should not be called gas gangrene; this name should be confined only to the first two types described.—I am, etc.,

H. JOHN NIGHTINGALE, M.S., F.R.C.S.

Southampton, July 24.

Local Treatment with Sulphonamides

SIR,—I was interested to read Major R. M. B. MacKenna's letter (July 20, p. 99) concerning the use of sulphapyridine (M & B 693) as a local application in certain cutaneous conditions, for lately I was successful in treating a case of my own on similar lines.

A young, mildly febrile, somewhat introspective, and superbly constipated ordinary seaman was admitted to my wards with a septic ulcer of the leg, together with marked inguinal adenitis. General examination revealed signs of chronic follicular tonsillitis, in addition to his dyschezia. Treatment along well-recognized lines quickly relieved the tonsillar condition, and salvos of enemata produced enormous results; but in spite of all the ulcer gently wept and remained adamant to all the usual forms of local therapy, his mildly febrile state also persisting. A smear of the ulcer exudate revealed numerous polymorphonuclear leucocytes, together with many pneumococci as the sole bacterial flora. On the strength of this the patient was given one tablet of sulphapyridine thrice daily by mouth, and the ulcer dressed with two tablets powdered and applied directly on white lint twice a day. Within two days his temperature had returned to normal and the ulcer was healing under a firm dry crust, and within four days the case was discharged to duty.

As Dr. J. Alexander Smith mentions in his article (June 22, p. 1016), the value of local treatment with chemotherapeutic drugs is still unsettled, and although the above is but the history of a single case, it would appear that in some instances at least the method is of value.—I am, etc.,

J. W. BUCHANAN,
Surgeon Lieutenant, R.N.V.R.

July 20.

First Aid for Burns

SIR,—I also read the brief directions for treatment of burns by a London surgeon in the Government leaflet "First Aid in Brief" referred to by your correspondent Dr. L. C. Lodge (July 20, p. 101). In the first place it recommends treating shock and covering the burn with some clean dressing, with both of which everyone will agree in theory though they may differ in practice. But tannic-acid jelly may not always be available; the chemist may be closed or miles away, and the teapot may be empty and the kettle upset. Now, Sir, the last thing at the moment I wish to do is to raise a debate upon the merits or demerits of the various methods of treating surface wounds, whether caused by burns or by other injuries. But I would like to draw attention to a simple form of treatment available almost everywhere which in my opinion has no rival.

Five years ago the treatment of burns by albumen was brought to my notice in South Africa, an old farmer's wife remedy, and ever since I have employed it with nothing but excellent results. Still I did not feel justified in more than casually making the same known in one or two journals. Now the case is altered. Within the last three months I have been in sole medical control of one very important factory (where burns are very frequent) and also other subsidiary companies. A record of upwards of two thousand burns of varying degrees, but principally first and second degree, now emboldens me to express my views, however unorthodox they may be. Results, after all, speak for themselves. In no single instance in the large number has there been any re-dressing, except when the dressing has been accidentally torn off or saturated.

With the exception of a mild form of antiseptic introduced in the emulsion employed for cleaning round the edges of wounds other than burns, no antiseptic of any kind is permitted by me to be employed. No cleansing of any kind or interference, such as clipping blisters or removing curled-up or loose epithelium from the burnt area, is allowed. No notice whatever is taken of shop dirt, such as manganese, soot, etc. The principal point advocated in the leaflet is at once carried out, but not according to first-aid textbook theory and practice. As shock comes from exposed areas and shock is a very grave contingency my principle is to cover such areas immediately with egg albumen. From the instant it is applied recovery from shock is evident, and in a very few seconds all pain ceases, whether it be in the sclerotic, the cornea, or any other

sensitive area of the body. Before long, when our new clinic is completed, the profession will have opportunity to learn our full technique. In the meantime a few simple directions must suffice.

Make no attempt to clean the burnt area or to collapse a burn blister. Immediately apply white of egg, not of necessity fresh, but preferably as fresh as possible. Now don't rush the next procedure. For burns of the face, except the application of another coat or two of albumen, say in a few minutes' time, no further dressing will be needed. For other areas, when it is available, patches of cellophane are placed over the burn and a light padding of cotton-wool over these to protect from injury. This is the first, last, and only dressing necessary. Minor burns of the first two stages heal in a week or even less, but should be protected and not uncovered for two weeks.

The rapidity with which new epithelium covers the non-meddled-with areas under albumen must be seen to be believed. No sign of scarring has ever been witnessed in any of these first-dressing burn cases. Egg albumen is available everywhere; it can be carried in a vacuum flask by all aircraft, in the turret of the battleship, or at the advanced dressing station. Only the white is used; the yolk is available for other purposes.—I am, etc.,

July 22. J. L. AYMARD.

Wounds from Bomb Fragments

SIR,—In the *Journal* of July 13 (p. 66) there was a letter from which one deduced that present high-explosive aerial bombs caused an aseptic wound by reason of their incandescent heat. That is not the general impression gained in the Spanish civil war. It was found that bomb splinters invariably caused a septic wound. This may have been due to the fact that the aerial bomb's explosion could only take place after it had buried itself into or hit the ground; naturally, each fragment carried with it some septic dirt from the source of impact. What might be regarded as "burned" wound edges (as Mr. Hugh Wilson further implies) were found to be black necrosed tissue. At no time did I come into contact with any patient whose tissues or clothes gave evidence of burning from high-explosive bombs, though several cases of burn from incendiary bombs were treated, and in these the wound was usually second or third degree.

At the beginning of the civil war an attempt was made to isolate and extract each piece of bomb fragment. This was found exceedingly laborious and time-wasting when several wounded arrived together. This groping about was soon abandoned by the war surgeons, who found that the additional operative shock to the patient would convert a relatively light walking case into one needing hospitalization and send the sepsis deeper into the surrounding tissue. The most satisfactory treatment for these multiple shrapnel wounds was found to be sterile vaselin with chloramine-T, dry sterile gauze dressing, and immobilization of the part. Where the shrapnel or foreign body was large enough to cause serious impairment of function an attempt was made to remove it.

I cannot lay too much stress on the following: (1) All shrapnel wounds in Spain were septic. (2) Attempts to remove multiple fragments resulted in further and deeper sepsis. (3) Operative shock had to be considered as well as available beds when deciding for or against operation.—I am, etc.,

Edinburgh, July 17. L. J. LE VANN.

Hand-seats for Casualties

SIR,—While practising the various methods for the carriage of casualties at my first-aid post the following ingenious variation for the two-handed seat was suggested to me by one of my bearers—Mr. Neate. Instead of the hook-grip, a rope ring, such as is used on board ship for games of deck tennis or quoits, is grasped by the hands of the bearers, and upon this and their wrists the patient sits. The grip of the ring is much stronger than that obtained by the interlocking fingers, no pad or handkerchief is necessary for the latter, and the sideways advance is easier, as the hands are in a more natural position. These rings cost 4s. 6d. for five. Each bearer could carry the ring fastened by the strap on the left shoulder. I am adopting this method in air raid practices and think that it merits extended use for the carriage of casualties over short distances where the two-handed seat is employable.—I am, etc.,

London, W.1, July 28. BERNARD E. POTTER.

Histamine and Insulin in Mental Treatment

SIR,—My attention has been drawn to the letters by Dr. R. D. Lawrence and Dr. K. W. Todd (July 20, p. 98), in one of which I have been mentioned by name, and my book on the treatment of mental disease by histamine and insulin misquoted. Dr. Todd has only carried out my treatment for a few weeks, having given in all, he says, about eighty injections (maybe to the wrong sort of case). I have had about five years' experience of this treatment, and have given during that time as many injections per week, probably, as Dr. Todd says he has given in his life. He says that the injections can be given by a nurse. This is a dangerous practice and should never be allowed. He says that in my book I state that I "cannot say how to start work on histamine." I have never said this. Many pages of the book are spent in giving minute practical details as to how to start. A lot of his letter is quite erroneous, especially as at times he seems to forget that he is dealing with a mixture of histamine and insulin, and not histamine alone. He will get no success by his proposed methods.

Dr. Lawrence has stepped out of his province of diabetic disease into the neutral country of mental disease, and has attempted, courteously, to dictate to alienists what they should or should not do, and how to treat their cases, acting merely on hearsay evidence. This is an impossible attitude to maintain. A patient is free to choose a doctor, a doctor is free to give what treatment he thinks fit, and the patient is entitled to it.—I am, etc.,

HORACE HILL,
Medical Superintendent, Laverstock House.

Salisbury, July 21.

Insulin Treatment of Schizophrenia in Wartime

SIR,—Having introduced the therapy into this country four years ago, may I reply briefly to Dr. R. D. Lawrence's letter (July 20, p. 98). No doubt insulin treatment has its economic drawbacks, but Dr. Lawrence himself suggests that the consumption of sugar can be cut down by using other carbohydrates; as to the enormous doses of insulin required, we have already learned how to obtain the same effect from much smaller doses than were used when the treatment was introduced.

Even so, the treatment is costly, but it cannot be replaced entirely by convulsion treatment, as Dr. Lawrence and many others believe. Invaluable as the latter is, many cases require the more adjustable, extensive, and lasting qualities of insulin treatment. A more rational selection of cases for insulin treatment should, however, be made, since experience has shown that "true" schizophrenia cannot be cured by insulin, nor by cardiazol for that matter. Schizoid states, however, which may take as heavy a toll of the nation as does schizophrenia, can be cured by insulin, and here the use of the precious drug is justified.—I am, etc.,

Falmouth, July 23. H. PULLAR-STRECKER.

SIR,—Dr. R. D. Lawrence has called attention to the large amount of insulin used in the treatment of schizophrenia. In time of war such a point is not to be ignored. For this reason, in January, 1940, I reviewed the male cases previously treated at this hospital by insulin shock, and I was forced to the conclusion that I must go on with the treatment because of the following results.

Fifty-six male patients had been discharged. The nearest relative of each was written to and asked what the patient was now doing; twenty-seven replied: (*a*) in H.M. Forces, six (one in an A.A. battery that shot down a raider); (*b*) work of national importance, ten; (*c*) non-reserved occupation, five; (*d*) passed medical board and waiting to be called up, one; (*e*) at present unemployed, three; (*f*) relatives had lost touch, two.

As to the relative value of treatment by insulin shock and by other agents such as cardiazol, the medical men who themselves do the work are agreed that insulin brings about more lasting results. Some energetic people do not get results with insulin; those who do, know that the insulin makes the patient fit for reintegration. The reintegration itself depends on the hard work of the therapist and his whole staff not only day after day but year in year out. It is impossible with cardiazol to make the treatment sufficiently thorough because if more than thirty shocks are given cerebral damage occurs.

It is an exaggeration to say that one pound of sugar a day is necessary for each case. Six ounces is the average amount used to bring the patient out of coma. Rarely one has to give an extra three ounces during the afternoon. Can it be contrary to the national interest, especially in time of war, that people are being rendered fit for service who otherwise would remain insane?—I am, sir,

West Ham Mental Hospital, July 22. E. H. LARKIN.

V.D. Prophylaxis for the Troops

SIR,—Now that large numbers of troops are coming from our Dominions to serve with our Forces in the various theatres of war many of us must be anxious about the measures being taken to safeguard the health of this magnificent young manhood and also of our own. In this connexion it is well to recall the terrible state of affairs which existed in the hospitals in Egypt among the Australian troops in the last war. These horrors have been vividly described in a book recently published called *African Doctor*.

When one hears of a high Church dignitary protesting against the issue of prophylactics as an insult to the young soldiers, one wonders how far we have progressed since then and how far such counsels influence those who have the medical charge of our soldiers. It is a most terrible thing to think of our Dominions sending the best of their young men to fight for us only to be infected with venereal disease and to carry these diseases back to their native land. In dealing with this question certain considerations should be kept clearly in mind.

First.—It is useless and worse than useless to rely on individual chastity—"Naturam expelles furca, tamen usque recurret." This is an irrefutable fact, and there is not the least use in trying to deny it. The vast majority of lusty young men launched on a new life will not grow into plaster saints.

Second.—Prophylaxis against syphilis is extremely effective, and this is so if measures are taken after infection even up to a good many hours. In the American Navy, I believe, liberty men have to report whether they have run the risk of infection, and if they have measures are taken. If they say "No" and then develop disease they are liable to severe punishment. It is said that the results of this procedure are excellent.

Third.—Men are surprisingly shy about these matters. I have had a good deal of experience of this as a ship surgeon. Men would come and ask for a "dreadnought" (calomel ointment in collapsible tubes) in a most diffident manner, as if it were a crime. Curiously enough, on the Line on which I served, although the prophylactic "dreadnought" was provided, the surgeon was instructed never to draw this fact to the attention of the crew or press such upon them. I may say that I systematically disregarded this.

We shall never get really further on in this matter until we grasp the fact that prophylaxis and treatment of venereal disease must be put on the same footing as that of other diseases. In the case of the Army, prophylactics should be on sale in all canteens and leaflets regarding their use freely circulated. Perhaps some such system as that in use in the American Navy might be introduced. Above all, we want to get rid of the pernicious influence of the "unco guid," who still look on this disease as God's punishment for sin and bleat that individual chastity is all that is necessary. They forget that a very large number of victims are quite innocent of the primary so-called sinful act.—I am, etc.,

P. F. CHAPMAN,
Taynuilt, Argyllshire, July 23. Colonel, I.M.S. (ret.).

Typhoid Prophylaxis for the Public

SIR,—I was much interested in Mr. Ernest Brown's reply to Mr. R. Gibson in the House of Commons on July 16 on the subject of typhoid prophylaxis, reported in your issue of July 20 (p. 104). In view of the increasing number of reports of typhoid epidemics following bombing it was decided to immunize the nursing and medical staff of this hospital by T.A.B. vaccine. By means of a spread-over system this has been done without interfering with the work of the hospital, but it has taken over a month to complete. It would be far from practicable to immunize people all at once in an area of special risk, owing to the disorganization of industry involved, and a spread-over system would take a considerable period. This, combined with the fact that there is probably a refractory period following T.A.B. immunization during which susceptibility is increased, leads me to believe that a dangerous feeling of false security is created by this idea of holding reserves of T.A.B. for use in an area of special risk.—I am, etc.,

J. F. ERSKINE,
July 23. Resident Medical Officer, Charing Cross Hospital.

Oversea Evacuation of Child Contacts of Tuberculosis

SIR,—The advice of Dr. A. Capes (July 20, p. 99) to tuberculosis officers, medical superintendents of sanatoria, family practitioners, and parents for an educational campaign to take advantage of the evacuation scheme over-seas (and at home) in removing children who are home contacts with open tuberculosis is practical and preventive. I can support its value from my experience as one who was personally concerned and responsible several years ago for a period of about five years for a hostel at Laira Battery, Plymouth, for such contacts. The reports of the French Grancher system of "boarding-out" contacts, which have been sent to me for many years, also confirm the immediate importance of Dr. Capes's suggestion.

The B.M.A. might prove a decisive factor in the reduction of the incidence of tuberculosis in wartime if it lent its support and induced the Ministry of Health to take an active lead in this anti-tuberculosis health campaign.—I am, etc.,

Woking, July 23. F. G. BUSHNELL, M.D.

Extraperitoneal Closure of Colostomies

SIR,—It gave me much pleasure to read Mr. Percival Cole's able advocacy of the extraperitoneal closure of colostomies (July 13, p. 66). As pointed out by him, there is nothing new in the method, and it was described many years ago by Greig Smith at a time when intraperitoneal manipulations were fraught with disaster and surgeons had perforce to keep outside the peritoneal sac. I have used the method for the past ten years with ever-increasing benefit to patients and satisfaction to myself. The knowledge that a colostomy can be closed so easily and successfully has markedly influenced my outlook on colon and rectal surgery. For instance, a well-established transverse colostomy made through the right upper rectus muscle turns excision of the pelvic colon or rectum into the surgery of the cul-de-sac. A few days' simple irrigation quickly cleanses this cul-de-sac, enabling all subsequent procedures to be conducted in a clean field and, what is equally important, at a safe distance from the colostomy. A few weeks later the colostomy can be closed by the extraperitoneal method and continuity restored. Devine has for some years advocated the establishment of a transverse colostomy as a preliminary to the abdomino-perineal excision of the rectum, and, speaking from personal experience, I believe that the adoption of this procedure will greatly help to reduce the operative mortality rate.

In seeking to close a colostomy by the extraperitoneal method a few simple principles must be borne in mind. It is important that the colostomy be entirely detached from the muscles and integuments so that it lies completely free except for its intact peritoneal coat. It is well to start about one-third of an inch from the muco-cutaneous junction, in order that the dissection may be conducted in sound tissues where the anatomical landmarks are not obscured. Care must be taken

not to open the peritoneal cavity, but if it is opened inadvertently it can be at once sutured with no subsequent ill effects; obviously it is as well to avoid this complication if possible. The edges of the bowel are then freshened by removing a snippet which is composed of the detached mucocutaneous junction. The continuity of the bowel is re-established by sutures placed in the transverse axis of the bowel. The muscles and integuments are then drawn together over the sutured bowel. A small drain of corrugated rubber tissue may be led out of the lower angle of the incision. In most cases primary union is obtained, but if the wound does discharge a little faeces no dismay need be felt, as in most cases the leak will quickly cease. After all, we are assisted in this operation by Nature's law that fluids and faeces prefer to pass along their own proper channels. One ounce of liquid paraffin twice daily is of great assistance in these cases.

It is far from my desire to decry the monumental work of Paul and Mikulicz, but it is to be remembered that the production of the "double-barrelled" colon necessary in their operation requires eight inches of free and available bowel. This necessity limits its applicability, whereas a colostomy designed to be closed by the extraperitoneal method can be made at any point desired by the surgeon provided it can be brought to the surface through intact peritoneum.

Anyone desiring further information on this subject might refer to an article I published in the Medical Supplement of the *Annual Report of the London County Council*, 1936.—I am, etc.,

W. PICKUP GREENWOOD, F.R.C.S.,
Medical Superintendent, Bethnal Green Hospital, L.C.C.

London, E.2, July 22.

Toxicity of Potassium Salts

SIR,—As a general practitioner I have found much interest in considering the implications of your leading article on the toxicity of potassium salts (July 20, p. 89), and note with much satisfaction your emphasis "that medicines containing potassium salts are to be avoided when there is any suspicion of renal insufficiency or cardiovascular disease." There are two observations I would like to make. The first is that if K salts are dangerous in suspected or proven renal or cardiovascular disease their continued use by apparently healthy people may easily reduce the resistance to those diseases: there are about forty preparations in the N.H.I. *Formulary* containing K salts. The second is to call attention to the large amount of K in certain foods: the following table is extracted from *Chemical Composition of Foods*, by McCance and Widdowson.

Food	Mg. per 100 gms.
Bovril	3,590
Marmite	3,440
Oxo cubes	2,690
Tea, Indian	2,160
Coffee, ground, roasted	2,020
Dried apricots	1,880
Butter beans	1,700
Black treacle	1,470
Horlick's	1,128
Peaches, dried	1,100
Ovaltine	1,100
Figs, dried raw	1,010

There are many people with renal and arterial disease who are constantly taking K in one or more of the above forms.

May I ask through your columns what the significance of the toxicity of K salts is going to mean to the general practitioner? It is he, much more than the academic medical man, who is to teach the public the road to health.—I am, etc.,

Kearsley, Lancs, July 21. D. OCKMAN.

Duplication of Hospital Staffs

SIR,—I venture to put forward a theme which has been in my mind since the Munich crisis—namely, that the surgical staffs of our hospitals should be increased. The number of surgeons at present holding hospital appointments may have been sufficient in peacetime, but now that air raids have started work will come in rushes which may easily be beyond the physical capacity of the present staffs to deal with; men must rest. Moreover, surgeons may themselves become casualties.

There are plenty of men in the Provinces who have had surgical experience, many of them Fellows of one of the Colleges, who would be only too glad to serve their local hospitals if they were permitted to do so. They may be "rusty" from lack of practice, but could recover with practice. At the beginning of the war they should have been taken on as assistants, and those who were found competent should now be operating regularly. In the word "competent" I include the capacity to know what cases to leave to more experienced surgeons.

Our main troubles in this war have been due to our dislike of preparing for eventualities which may never arise. Such preparation has seemed to be waste of time and money. But we should have had enough knocks by now to know better. The trade unions have agreed to the dilution of labour, and it is time that reasonable opportunities for improving their technique were given to all those doctors who by natural gifts, hard work, and special diplomas have qualified themselves for surgical appointments.

This does not apply to me, as I have no surgical ability, but I consider it of national importance to raise the issue at this time.—I am, etc.,

July 23. "FORTY-SEVEN."

Medical Certificates for Aliens

SIR,—Referring to Dr. R. R. Willcox's letter (July 20, p. 100), it would be hardly in the interest of doctors to throw away their reputations by issuing numerous false certificates. Anyone who had an opportunity of examining these refugees on arrival in this country, after their misfortunes, would have found that they had suffered considerably in health. This explains the large number of certificates with which the police have been confronted. May I reassure the colleagues of Dr. Willcox, who seem to be so greatly concerned lest the police should refuse to intern a number of aliens, that the police do not err on the side of leniency, as often the certificates are disregarded, even in cases of serious organic disorder. So let us not be stampeded into unnecessary and silly suspicions, but let us treat those unfortunate people with the same consideration as any other patient, without letting our own personal prejudices influence us. I should have thought that an elementary practice of our profession. I therefore appeal to the common sense of medical men not to let themselves be influenced by these misleading hints which can do harm, both to the profession and to the unfortunate refugees.

In order to avoid the obvious rejoinder, may I point out that I am neither a German nor a refugee.—I am, etc.,

London, W.1, July 21. E. HERZBERG.

The Merseyside Hospitals Council, which runs one of the largest contributory schemes in the country, and serves hospitals and institutions in Liverpool, Birkenhead, Wallasey, and Waterloo, distributed last year £111,109 to the associated voluntary hospitals. This, notwithstanding the fluctuations and uncertainties created by the war, was an increase of £1,888 on the distribution for the previous year. In addition a considerable increase was made in payments to the municipal hospitals as a result of a new agreement with the Liverpool Corporation. A convalescent home service was provided through the council for 2,387 contributors, also an ambulance service, which conveyed over 19,000 patients between their homes and the hospitals. Evacuation brought its special problems. Many thousands of dependants of contributors and some contributors themselves were sent to "safe" areas, but the council arranged with twenty-two other contributory schemes to act as voluntary receiving depots, and thus the privileges of the scheme have remained available to the exiles. The employees' contributions amounted to £142,507, to which £35,870 was added by the employers. Over 6,000 places of employment are concerned in the penny in the pound fund, and 50,000 individual contributors brought in a further £24,461. Another activity of the council during the year was the organization of the Lord Mayor of Liverpool's appeal on behalf of the Red Cross and St. John Ambulance, as a result of which a total contribution of more than £12,000 was forthcoming.

Obituary

R. C. ELMSLIE, M.S., F.R.C.S.

Consulting Orthopaedic Surgeon, St. Bartholomew's Hospital

The passing of Reginald Cheyne Elmslie at the age of 62 has removed probably the most outstanding figure of his time in British orthopaedics and will be lamented by orthopaedic surgeons everywhere.

The son of a sea captain who spent his career in sail, Elmslie inherited from the Cheynes of Edinburgh a connexion of some centuries with medicine. From Brighton Grammar School he entered St. Bartholomew's with a scholarship. There he obtained a junior and senior scholarship and the postgraduate Lawrence scholarship. He qualified with the Conjoint diploma in 1901, and proceeded to the M.B. in 1902, and the F.R.C.S. and M.S. in 1904, qualifying in the latter for the gold medal. In the following year he was awarded the Jacksonian prize of the Royal College of Surgeons. After holding house appointments at his own school and elsewhere, including the Royal National Orthopaedic Hospital, he held a demonstratorship of pathology at St. Bartholomew's for five years, and this seems to have had an important influence on his surgical outlook. In 1910 he was appointed surgical registrar, and in 1912 he became surgeon in charge of the orthopaedic department, a post which he was to hold for twenty-five years. In the meantime he had been appointed to the Metropolitan Hospital and to the Royal National Orthopaedic Hospital, at which he subsequently became senior surgeon. He was among the twenty inspectors appointed in 1905 at the inauguration of the medical inspection of school children.

During the last war Elmslie was attached to the First London General Hospital and was in charge of the Military Orthopaedic Hospital, Shepherd's Bush, which, sponsored and made possible by Sir Robert Jones, was largely the fruit of Elmslie's brain and industry. He was also surgeon to Queen Mary's Hospital, Roehampton. For his services he received the O.B.E., military division. Elmslie passed from the active to the consulting staff of St. Bartholomew's in 1937, before he reached the retiring age, because failing health began to be manifest. Nevertheless he continued working till within a few weeks of his death. It was a great disappointment to him that his health prevented his taking a more active part in the present war, albeit he held the post of consulting surgeon to the Ministry of Pensions, and he could scarcely have realized how his disappointment was shared by others, who would else have looked to him as the natural successor to his late friend Sir Robert Jones.

A colleague writes:

Elmslie's chief pride would probably be that he advanced orthopaedics, though his numerous writings do not give full credit to all that he did. He was glad that he brought the pathological outlook into orthopaedics. He could not have reached his achievements and his international reputation, however, without his clear thinking, his admirable judgment, and his industry. His wisdom was much sought for committee work. Of this he did much at St. Bartholomew's, where he held the posts of chairman of the medical council and of the medical college committee. He was vice-chairman of the Chartered Society of Massage and Medical Gymnastics from 1925 to 1929, thereafter chairman, and in 1939 president, and he took his full share in the work of various committees of the Society. He took part in the formation of the Central Committee (now Council) for the Care of Cripples and in 1938 became chairman of its executive committee. He was an original member of the British Orthopaedic Association, of which he later became president, and also president of the orthopaedic section of the Royal Society of Medicine. In the British Medical Association, which he joined in 1902, he was vice-president of the Section of Orthopaedics in 1921 and 1932, and president in 1924. He served on the committees concerned with the register of physical treatment technicians, registration of osteopaths, physical education, and workmen's compensation. He gave evidence before the Select Committee of the House of Lords which considered the osteopaths' claim for registration. At the time of his death he was a member of the Royal Commission on Workmen's Compensation. He was on the Council of the Royal College of Surgeons from 1933 until his death.

The principal characteristics of Elmslie, the man, were his simplicity, his straightforwardness, his tolerance, and his healthy independence. He was not easy to know, but once known he inspired nothing but devotion and enthusiasm. He was bound up in his work, but he had vision for the wider implications of orthopaedics, as witness his interest in medical gymnastics, improved organization of fracture treatment, and the welfare of cripples. Like most men with a broad outlook, he encountered frustrations which would have broken a lesser man, but he endured these with equanimity.

One of the greatest achievements of a teacher is to leave disciples; in Southern England an important orthopaedic centre not staffed or dominated by Elmslie-trained men is the exception rather than the rule, just as the pupils of Sir Robert Jones are conspicuous in the North.

Dr. W. ALLEN DALEY and Dr. C. J. THOMAS send the following:

While Elmslie's eminence as an orthopaedic surgeon is well known to the profession, the immense services he rendered throughout his career to the social welfare, education, and after-care of cripples may be less generally appreciated. His connexion with the social welfare of invalid children began in 1905, when he joined the brilliant band of young experts whom Dr. James Kerr gathered round himself to blaze trails which led later to the establishment of the school medical service throughout the country. His official connexion with the London County Council lasted from 1905 to 1920. At first Elmslie worked in the ordinary elementary schools, but through their rapid increase in number and importance the special schools for physically defective children soon claimed precedence, and in the later years of his connexion with the Council's educational system Elmslie's part was that of consulting orthopaedist in charge of the schools for cripples. His pioneer work in these early days profoundly affected the course of the development of public care for the crippled child, not only in London but also in provincial England and in Wales. His early analyses of the causation of crippling are classical models which form the basis of later comparisons.

The pressure of his private and hospital work necessitated the severance of his official connexion with the public service in 1920. He was, however, almost at once commissioned by the Council to undertake a survey of the physically defective children of London in relation to the reorganization and reorientation of the work which formed part of the reconstruction after the great war of 1914–18. His report, which was presented to the Council in 1922, formed the most comprehensive account then in existence of this field of medicine and pointed the way to important advances in the public provision for prevention and treatment of crippling diseases of childhood, including the orthopaedic schemes which have since been established by county education authorities under the guidance of the Board of Education. More recently he undertook the chairmanship of a committee appointed to investigate the claims of Miss E. Kenny to have devised a

new treatment for infantile paralysis. He spared no time or trouble in supervising the work at the special unit set up at Queen Mary's Hospital, and the report of his committee was a document of vital importance in the assessment of her claims.

He maintained to the end of his life a close and directing relationship with the voluntary associations which devote themselves to the welfare of crippled children. Wartime evacuation produced a most baffling position in regard to the orthopaedic care of children in the reception areas, and Elmslie as chairman of the Central Council for the Care of Cripples was greatly exercised in mind by the urgency of this problem. His constructive advice and encyclopaedic knowledge of the possibilities in each area helped to solve the problems which seemed at one moment to be beyond solution. By Elmslie's death crippled children have lost a great and disinterested friend and protector.

[The photograph reproduced is by Russell, London.]

D. ELLIOT DICKSON, M.D., F.R.C.S.ED.

Dr. J. M. Johnstone, honorary secretary of the Fife Branch of the British Medical Association, sends the following further tribute to the memory of Dr. David Elliot Dickson:

By the death of Dr. Elliot Dickson the medical profession in Scotland has lost one of its ablest advocates and a representative who can ill be spared in these troubled times. Country practitioners, and particularly colliery surgeons, found in him a leader who was thoroughly cognizant of their needs and could be depended upon for wise guidance combined with persuasive ability and who was never afraid to take strong action when required. His most striking attribute was his power of bringing men together and keeping them united, and he was at his best in settling disputes. He never tired of arranging social and clinical meetings, and held strongly to the opinion that if practitioners would only take the trouble to become better acquainted with each other there would be fewer serious differences. As a medical advocate, he combined great persuasive ability with the art of developing a logical argument, depending on reason and common sense rather than rhetoric or oratory. He was devoted to literature, read widely, and in his later years became an assiduous connoisseur of word and phrase. I remember a round of golf brightened considerably by a dissertation on the use, with illustrations, of that figure of speech termed an oxymoron. When, as chairman, he opened a Conference of Scottish Panel Committees with an apt quotation of the opening lines of Milton's *Paradise Lost*, the parallel between the tempter and Lloyd George with his "rare refreshing fruit" at once appealed to a cold and combative audience and put them in happy mood. As a sportsman, his chief recreations were golf and angling, especially golf, but a summer afternoon with a book on a shady lawn was not without appeal. At social functions he was in his element, never lacking an apt story or humorous speech. No practitioner in trouble ever appealed to him in vain. His whole life was spent in service to his fellow men, and we in Fife feel that we have lost a brother and a friend.

THIERRY DE MARTEL

Alluding to the obituary of Thierry de Martel in the *Journal* of July 27 (p. 135), Dr. J. D. Rolleston writes: Among the many friends whom de Martel had in this country was Sir Victor Horsley, whose views on the alcohol problem he shared, unlike the great majority of his fellow countrymen. As regards his ascendants, to whom reference is made in the previous note, his father was the great-nephew of Mirabeau, as is indicated in his mother's full name, Sibylle Gabrielle Antoinette Riqueti de Mirabeau, Comtesse de Martel de Janville. This lady, whose pseudonym was "Gyp," was the writer of a large number of witty and satirical sketches, of which "Ces Bons Docteurs" (1892) was one of the best. An excellent portrait of de Martel appears in the *Dictionnaire National des Contemporains*, 1936, p. 419. He was elected an honorary member of the surgical section of the Royal Society of Medicine in 1932.

Surgeon Captain Lambert Rogers, R.N.V.R., writes: In your pleasing tribute to Thierry de Martel, for whom and whose work many in this country had very great regard, you twice and quite justly refer to the connexion between his work and that of Harvey Cushing. I have, however, on several occasions heard de Martel acknowledge his great debt to Sir Victor Horsley, whom he regarded as the pioneer of neurosurgery. He used to say that when a young man beginning to practise surgery he travelled from Paris to London every week—I think it was on a Tuesday—to see Horsley at work, and he stated many times that Horsley had been his inspiration and that he had learnt his neurosurgery from him. I think it is only fair both to de Martel, whose death all who knew him will deplore, and to Horsley to draw attention to this.

L. D. R. writes: The death of JOHN MENTON after a comparatively short illness came as a great shock to the medical profession in Staffordshire. To say that he will be missed is a truism—he cannot be replaced. His genial Irish humour endeared him to all with whom he came in contact. His official position was pathologist and bacteriologist to the county of Stafford, but there are many medical men who have reason to be grateful to him for his unofficial role as a disinterested counsellor and friend both in their work and in their private affairs. He came to Stafford after being demobilized, and soon took in hand the development of V.D. clinics in Stourbridge, Dudley, and elsewhere. He transformed the county laboratory from a very small affair in Wolverhampton in 1920 to the vast unit in Stafford, one of the finest in the country. Menton was widely known for his work on the morphology of the *C. diphtheriae*, and his work on the serum tests for syphilis is recognized throughout the medical world. His more recent research into the diagnosis of undulant fever attracted attention in America, where he was asked to read a paper at the International Congress in New York last September. Always a patriot, he hurried back at the conclusion of the congress and offered his services. His position at Stafford, however, precluded him from being released. A few years ago he founded the Mid-Staffordshire Medical Society, and acted as honorary secretary until 1939. During this time the meetings of the society were very largely attended, and many eminent men from London and the Provinces were numbered on the lecture list. The sympathies of a large circle of medical and non-medical friends are extended to his widow.

We regret to record the death of LIONEL HANDSON, M.B., B.S.Lond., at his home in Willingdon, Sussex, on July 14, aged 68. Dr. Handson was educated at Guy's Hospital, where he was held in high esteem both as a student and as house-physician. After leaving hospital he practised for some years in the City of London. In 1909 he moved to Polegate, Sussex, where he worked for twenty-three years, till failing health forced him to give up active practice in 1932. A colleague writes: Handson represented the finest type of doctor. A man of the highest principles, very retiring and self-effacing, he hated all sham and pettiness. He possessed remarkably sound power of judgment, his advice on all matters, whether medical or otherwise, being greatly valued by friends and colleagues. His medical knowledge was thorough and up to date, and his practical skill and gentle charm of manner ensured for him a very extensive practice. He worked indefatigably, never sparing himself. His life was devoted to the service of his patients and friends. It is not to be wondered at that he was universally loved and trusted. Shortly after he had had to give up practice he, together with two co-trustees, was called upon to administer the residue of the estate of an old patient and friend. A very large sum of money had to be devoted to charitable purposes at the absolute discretion of the trustees. With characteristic thoroughness Handson threw his whole energies into carrying out this difficult and responsible task to the best possible advantage. A carefully thought out scheme was evolved consisting of donations to some 130 charitable objects. Among these a substantial amount was included to build and endow twelve almshouses for the benefit of old employees of the testator and the poor of his village. To make this a success became Handson's chief object in life,

and it was a proud and happy moment for him when at length the inmates were installed. Unfortunately the happiness was only short-lived. A claim was suddenly made that the will was invalid owing to uncertainty in the wording of the clause dealing with the residue. It looked as if the culminating achievement of his life's work was to be rendered vain. The resulting anxiety undoubtedly had a definite effect in bringing about the final breakdown of his health. There is tragic irony in the fact that on the day of his funeral the case was tried in the Court of Chancery and the verdict given in favour of the validity of the will. Handson was unmarried, but two devoted sisters survive him.

The late Dr. ROBERT PATERSON, a senior medical officer of the Ministry of Health, graduated M.B., Ch.B. at the University of Glasgow in 1901 and joined the British Medical Association in 1909. He was appointed a member of the National Formulary Subcommittee and the A.R.P. Subcommittee in 1937, and in the following year joined the Standing Subcommittee of the Central Ethical Committee and the Hospital Emergency Services Subcommittee. Sir Arthur MacNalty, Chief Medical Officer, Ministry of Health, writes: The Medical Department of the Ministry of Health has suffered a heavy loss through the death of Dr. Robert Paterson, Senior Medical Officer for General Practitioner and Insurance Medical Services. A medical graduate of Glasgow University, after extensive experience in general practice Dr. Paterson entered the service of the Ministry in 1920. Here his zeal, efficiency, and good work soon marked him out for promotion, and he eventually succeeded the late Dr. Duncan as Senior Medical Officer in 1935. In addition to important work for the Insurance Medical Service, he planned much of the organization of the National Service Recruiting Boards and helped largely in many other fields of war work. Considerate for his staff, he never spared himself in service to the State. His death will be mourned not only by his friends and colleagues but by the insurance medical practitioners as a whole. He was their true friend and always lent a sympathetic ear to their difficulties and problems.

The Services

HONORARY SURGEONS TO THE KING

The following officers have been appointed Honorary Surgeons to the King: Colonel F. F. S. Smith, I.M.S., with effect from November 8, 1939, in succession to Major-General E. W. C. Bradfield, C.I.E., D.B.E., I.M.S.; Colonel E. G. Kennedy, I.M.S., with effect from November 24, 1939, in succession to Colonel S. G. S. Haughton, C.I.E., O.B.E., I.M.S.; Colonel R. H. Candy, C.I.E., I.M.S., with effect from January 24, 1940, in succession to Colonel W. E. R. Williams, O.B.E., I.M.S.

MEDICAL OFFICERS MENTIONED

A Supplement to the *London Gazette* issued on July 26 includes the names of the following who have been brought to notice in recognition of distinguished services rendered in connexion with operations in the field up to June, 1940. It is announced that a second list for March to June will be issued later.

Commands and Staff

Colonels A. Hood, C.B.E., R. G. Shaw, *M.C.*, A. D. Stirling, D.S.O., J. M. Weddell, and G. Wilson, C.B.E., *M.C.*

Royal Army Medical Corps

Lieut.-Colonels G. S. McConkey, W. Campbell, G. P. Kidd, *M.C.*, W. C. Hartgill, *M.C.*, M. P. Power, O.B.E., *M.C.*, G. T. Hankey, and F. J. Hallinan.

Major (Acting Lieut.-Colonel) D. H. Murray.

Majors W. D. Newland, *M.C.*, H. C. Todd, G. Perkins, *M.C.*, D. Crellin, *M.C.*, and S. O. Dolan.

Temporary Major R. S. de C. Bennett.

Captains (Acting Majors) W. E. Underwood and C. R. Sadler.

Captain R. Stowers, *M.C.*

Temporary Lieuts. I. A. M. Paton and A. J. Warren.

CASUALTIES IN THE MEDICAL SERVICES

ROYAL NAVY

Surgeon Lieut. ROBERT HENRY ALISTER TURNER, R.N., is included in a list of officers "Missing, Believed Killed" published by the Admiralty on July 25. He was educated at the University of Cambridge and Westminster Hospital, qualifying M.R.C.S., L.R.C.P. in 1934. His home was at Castle Bytham, Grantham. He joined the British Medical Association in 1939.

Probationary Temporary Surgeon Lieut. DOUGLAS GRANT WALKER, R.N.V.R., is posted as "Missing, Believed Killed" in an Admiralty casualty list published on July 25. He was educated at the University of Edinburgh and graduated M.B., Ch.B. only last year. His home was at Camelon, Falkirk.

ROYAL ARMY MEDICAL CORPS

The name of Lieut. THOMAS JAMES STEVEN, R.A.M.C., is included in a list of officers killed, published by the Army Council on July 26. He graduated M.B., Ch.B. at the University of Glasgow in 1925, proceeding M.D. in 1931. He held the posts of house-physician and house-surgeon at the Children's Hospital, Bradford, and assistant medical officer at Kensington Infirmary before settling in practice at Pinner, Middlesex. He joined the British Medical Association soon after graduation.

Wounded

Temporary Surgeon Lieut. T. B. McLean, R.C.N.V.R. (H.M.C.S. *Fraser*).
Major James Roderick Johnston Cameron, R.A.M.C.
Captain Francis Vernon Allen, R.A.M.C.
Lieut. Kenneth Cooke Burrow, R.A.M.C.
Lieut. Gilbert Dalley, R.A.M.C.
Lieut. E. Goodridge, R.A.M.C.
Lieut. John Carlton Heal, R.A.M.C.
Lieut. Arthur Kenneth Kerr, R.A.M.C.
Lieut. David Fortune Laing, R.A.M.C.
Lieut. Grove D. Macintosh, R.A.M.C.
Lieut. Henry Andrew Mullen, R.A.M.C.
Lieut. Sydney Lionel Newman, R.A.M.C.
Lieut. Arthur Stanley Torrance, R.A.M.C.
Lieut. James Campbell Townley, R.A.M.C.

Injured

Temporary Surgeon Lieut. John Wenlock Ashley, R.N.V.R. (H.M Destroyer *Imogen*).

Wounded or Injured

Probationary Temporary Surgeon Lieut. Norman Ferguson Elliott Burrows, R.N.V.R.

Missing

Temporary Surgeon Lieut. Arthur Philip Booth Waind, D.S.C., R.N.V.R.
Major Stanley Ward Barber, R.A.M.C.
Major Edward Davies-Thomas, R.A.M.C.
Major William Robert Henderson, R.A.M.C.
Captain John Burns, R.A.M.C.
Captain Philip Tyndale Cooper, R.A.M.C.
Lieut. David Alexander Draffin, R.A.M.C.
Lieut. Philip Athelstan Forsyth, R.A.M.C.
Lieut. Edward Gartside, R.A.M.C.
Lieut. Trevor Charles Noel Gibbens, R.A.M.C.
Lieut. Isaac Jacobson, R.A.M.C.
Lieut. Norman Rupert Chamberlain Lansdell, R.A.M.C.
Lieut. Colin Kenneth McCoan, R.A.M.C.
Lieut. Isidore Schrire, R.A.M.C.

Missing, Believed Prisoner of War

Acting Major Philip Harker Newman, R.A.M.C.
Lieut. Austin George Hewer, R.A.M.C.
Lieut. John Walker Sinclair Irwin, R.A.M.C.
Lieut. Abraham Lemel Karstaedt, R.A.M.C.

Prisoner of War

Captain Eric Redgewell Dansie, R.A.M.C.

DEATHS IN THE SERVICES

Staff Surgeon BERNARD LEY, R.N. (ret.), died at Chilbolton, Hampshire, on July 16. He was educated at St. Bartholomew's Hospital and took the M.R.C.S., L.R.C.P. in 1893. After serving as clinical assistant in the gynaecological department at St. Bartholomew's Hospital and at the Samaritan Hospital for Women, in the medical department of the West London Hospital, and in the East London Children's Hospital, Shadwell, he entered the Royal Navy, from which he retired many years ago as staff surgeon and went into practice in London. He gained the Gilbert Blane gold medal in 1904, while serving as staff surgeon.

Colonel FAIRLIE RUSSELL OZZARD, I.M.S. (ret.), died at Parkstone, Dorset, on July 16, aged 74. He was born in 1865, the son of Mr. J. W. Ozzard, paymaster of H.M.S. *Victory* at Portsea, was educated at the London Hospital and qualified as M.R.C.S., L.R.C.P. in 1888, subsequently taking the D.T.M. in 1907 and the D.P.H. in 1908. He entered the I.M.S. as surgeon in 1889, passing into Netley first out of

sixty-six candidates for ten vacancies, became lieutenant-colonel after twenty years' service, full colonel in 1919, and retired in 1920. Most of his service was spent in military employ, but he was for some time deputy sanitary commissioner in Bengal. He served on the North-West Frontier of India in the two Miranzai expeditions of 1891 (medal with clasp); in the Tochi campaign of 1897–8 (medal with clasp); in China in 1900 (medal); and in France and Belgium in the war of 1914–18, being twice mentioned in dispatches.

Lieut.-Colonel JOHN HANDFIELD BRUNSKILL, D.S.O., O.B.E., R.A.M.C. (ret.), died suddenly at Kingston Hill on July 21, aged 65. He was born on April 17, 1875, and was educated at Trinity College, Dublin, where he graduated M.B., B.Ch., B.A.O. in 1900, also taking the D.P.H. in 1903. Entering the R.A.M.C. as lieutenant in 1900, he became lieutenant-colonel in 1918, and retired in 1920. After retirement he settled in practice at Kingston Hill, where he was an honorary medical officer to the Kingston-on-Thames Victoria Hospital. He served throughout the war of 1914–18, when he was mentioned in dispatches three times, in 1915, 1916, and 1917. He received the D.S.O. and, after the war, the O.B.E. He joined the British Medical Association in 1921 and was chairman of the Kingston-on-Thames Division in 1926–7.

Major WILFRED BURNET FARIS ORR, R.A.M.C., died at Llandudno on June 29. He was the only son of Dr. and Mrs. James Orr of Templepatrick, Co. Antrim, and was educated at Queen's University, Belfast, where he graduated M.B., B.Ch., B.A.O. in 1921, also taking the D.P.H. in 1928. After filling the posts of casualty officer at Sheffield Royal Hospital and resident medical officer at the Wharncliffe Ministry of Pensions Hospital, Sheffield, he entered the R.A.M.C. as lieutenant in 1923 and became major in 1934. He joined the British Medical Association in 1926.

Universities and Colleges

UNIVERSITY OF OXFORD

At a Congregation held on July 27 the following medical degrees were conferred:

B.M.—B. R. Mitchell, G. H. Grant, R. G. P. Almond, J. L. Pinniger.

UNIVERSITY OF LONDON

GUY'S HOSPITAL MEDICAL SCHOOL

The following awards have been made at Guy's Hospital Medical School: War Memorial Scholarship in Science (value £200).—Divided between A. St. J. Dixon and I. A. H. Munro; Open Scholarship in Science (value £100).—W. R. Lee; Confined Scholarship in Science (value £100).—Divided between Prem Buri and R. G. G. Jones.

The following candidates have been approved at the examination indicated:

M.D.—*Branch I (Medicine)*: P. R. K. Coe, P. H. Denton, J. de Swiet, J. Hartsilver, G. A. Kiloh, D. de la C. MacCarthy, J. Pemberton, G. R. Steed, Gladys M. Tullidge, E. Woodford-Williams (*University Medal*), A. L. Wyman, C. A. Young. *Branch II (Pathology)*: Mary Barber. Branch IV (*Midwifery and Diseases of Women*): Mary D. Daley, H. L. M. Roualle, D. J. N. Smith. *Branch V (Hygiene)*: E. C. H. Huddy, Emily L. Simon.

ROYAL COLLEGE OF PHYSICIANS OF LONDON

At a meeting of the Royal College of Physicians of London held on July 25, with Sir Robert Hutchison, Bt., in the chair, the following were elected officers for the ensuing year: *Censors*, Anthony Feiling, F. S. Langmead, A. C. Douglas Firth, J. A. Ryle; *Treasurer*, Sir Charles Wilson; *Registrar*, H. L. Tidy; *Harveian Librarian*, Arnold Chaplin; *Assistant Registrar*, Reginald Hilton.

The President announced that he had appointed Sir Farquhar Buzzard as Harveian Orator and Dr. S. W. Patterson as Bradshaw Lecturer for 1941. The Harveian Oration on October 18 next will be delivered by Lord Horder. It was announced that the Gilbert Blane Gold Medal had been awarded to Surgeon Lieut.-Commander P. K. Fraser, R.N. Prof. G. W. Watson was elected representative on the Council of King's College, University of Durham.

Membership

The following candidates, having satisfied the Censors' Board, were elected to the Membership of the College:

K. M. Bhansali, M.B.Lond., R. G. Bickford, M.B.Camb., R. D. Blachford, M.B.Lond., R. C. Browne, M.B.Oxf., R. V. Coxon, M.B.Lond., M. D. Deshmukh, M.B.Bombay, M. G. El Dabe, M.B.Cairo, F. K. Khosrawy, M.B.Bombay, R. S. Lawrie, M.B.Lond., H. G. Miller, M.D.Durh., S. K. Mukherjee, M.B.Calcutta, D. C. Mullally, M.D.Belf., H. Muller, M.B.Oxf., P. W. Nathan, M.B.Lond., C. D. Needham, M.B.Lond., C. P. Petch, M.B.Camb., G. Prasad, M.D.Patna, J. B. Rennie, M.D.Glasg., V. C. Robinson, M.B.Camb., W. H. S. St. John-Brooks, M.B.Camb., D. A. Sanford, M.B.Lond., L. M. Sanghvi, M.B.Bombay, J. de Swiet, M.B.Lond., R. J. Twort, M.B.Aberd., E. Woodford-Williams, M.B.Lond., J. L. Woodhouse, M.D.Lond., A. L. Wyman, M.B.Lond., M. Zia-Ullah, M.B.Punjab.

Licences and Diplomas

Licences to practise were conferred upon the following 280 candidates (including 32 women) who have passed the final examination of the Conjoint Board, and have complied with the by-laws of the College:

Phyllis L. F. Acland-Hood, J. K. Adamson, D. Adler, C. U. Aitchison, B. Alhadeff, Lavinia S. Alington, M. G. Allen, Katharine M. Angus, I. Ansell, E. D. Arkell, B. P. Armstrong, J. P. Baker, D. N. Balsekar, Gwendolyn F. Barber, N. K. Barber, O. H. Belam, W. H. Bennison, A. P. Bentall, R. G. Birch, Gertrude K. Birchenough, Betty C. Bloxham, R. D. Borthwick, G. C. Bough, G. B. Bowater, R. A. Bowen, A. I. W. Boyd, Annie E. Brown, D. J. Browne, J. W. M. Bullen, J. C. Bulstrode, D. W. Burnford, R. H. Butcher, A. C. Camm, R. L. Canney, K. Chander, G. H. G. Chase, M. S. Chayen, D. Chisholm, O. Clarke, W. H. Clarke, L. Clement, W. G. F. Clunies-Ross, G. R. V. Coombs, C. C. Corfield, A. G. C. Cox, J. G. Craddock, J. G. Cutts, W. Darby, A. K. Das, E. O. Davies, Lorna M. M. Davies, Mary R. Davies, G. S. Davis, A. M. Dawes, P. A. Dawes, Hilda M. Dean, H. F. Devlin, P. D. Dhameja, F. L. Dickson, S. C. Dobson, W. M. M. Douglass, R. L. Dreifuss, E. H. Eason, M. C. Edmond, W. G. Edwards, A. R. Elsom, A. M. Evans, B. I. Evans, C. C. Evans, I. H. Evans, W. M. Evans, I. G. Fergusson, J. D. Finnegan, R. Flew, D. M. Forster, Mary Foster, A. M. Fraser, E. S. Frazer, J. Freeman, J. F. G. Garden, Frances V. Gardner, P. H. Garrard, E. I. Garratt, S. C. Gold, H. Goldcup, P. Goodman, S. Gould, M. C. Graham, M. Grolman, F. W. Guanziroli, H. P. Guerrier, A. N. Guthkelch, M. J. Hackett, R. C. M. Hadden, M. H. K. Haggie, A. G. Hall, M. Hall, T. Hambly, D. A. Hamilton, Doreen S. Harker, A. R. Harrison, J. C. Harrison, T. E. Harvey, R. T. Hastings-James, S. Haythornthwaite, D. S. Hayton-Williams, R. F. Hendtlass, A. P. Heneghan, Kathleen Hodkinson, D. G. Horan, D. Horton, J. B. Houghton, G. F. Houston, D. E. Jarman, P. G. Jeffries, A. O. John, C. L. Johnston, D. G. G. Jones, E. B. Jones, E. E. Jones, E. W. Jones, J. Jones, J. C. Jones, J. E. C. Jones, S. Ll. Jones, Elspeth M. Kaye, J. H. Keesey, E. Keidan, R. K. I. Kennedy, A. W. Kennett, M. D. Kipling, R. Kobylinski, A. Lang, Mary E. Larg, J. A. Learner, J. McL. Lees, M. Leibson, G. Levy, C. B. Limerick, J. M. Lipscomb, J. A. Little, F. Livesey, Anne N. M. Llewhelin, J. T. A. Lloyd, Mary E. Lloyd, J. A. N. Lock, J. L. McCallum, T. P. W. McCarthy, W. McConnell, J. A. MacDonald, I. M. G. MacKay, K. C. MacKelvie, W. D. Mail, E. T. Manley, Winifred M. Markham, H. R. Marrett, T. S. Marshall, T. Marshall, Miles P. Martin, G. Mason-Walshaw, V. F. Masters, A. Mathison, K. H. Mehta, K. J. Merris, J. J. Messent, I. H. Meyer, Margaret Middleton, J. E. Miller, R. I. Milne, R. S. Monro, D. G. Morris, S. Moss, C. E. S. Myers, T. N. Nauth-Misir, F. R. Neubert, F. W. Newby-Good, J. R. O'Brien, B. H. O'Dowd, R. G. Paley, R. W. Palmer, D. A. Parker, W. H. Parkinson, M. J. Parsonage, J. F. Paxton, C. W. Peck, P. M. Peters, E. Petrie, D. N. Philip, T. B. W. Phillips, B. A. Protheroe, R. C. B. Pugh, J. M. Pullan, D. W. Quantrill, A. E. Ram, D. C. Rawlins, M. P. G. Rawlinson, J. H. Rees, D. G. Reinold, C. Remington-Hobbs, G. J. Reynolds, R. G. Richards, R. H. Rickards, D. B. Roberts, T. W. L. Roberts, W. N. Rollason, E. R. Roseveare, D. Rosser, R. N. Rycroft, S. M. Sadiq, N. F. Saher, H. Salz, R. A. Sandison, E. Saphier, E. Scott, W. Sewell, H. A. Shaw, J. V. Sheldon, R. A. Shooter, G. F. G. Siggins, Mary C. Simpson, Lesley P. Sitwell, N. S. Slater, C. G. F. Smartt, Daisy M. Smith, Honor M. V. Smith, L. W. Smith, Margaret J. Smith, J. H. Smitham, D. R. Snellgrove, N. Southwell, Irene J. Stark, G. E. Stein, Ruth M. Stevenson, C. W. Stewart, A. B. Stratton, G. W. E. Studley, C. Suarez, P. V. Suckling, C. S. N. Swan, T. D. V. Swinscow, R. E. Symes-Thompson, L. R. S. Taylor, R. Taylor, G. T. G. Thomas, G. S. Thomas, J. H. Thomas, G. W. Thurlow, R. McL. Todd, G. F. W. Tripp, R. B. Tulk-Hart, H. M. Upshon, R. D. G. Vann, Phyllis Vilain, Margaret R. Wade, D. H. G. Walker, M. McD. Walker, R. B. Walker, H. A. Warbrick-Smith, A. S. Watson, H. B. Watson, Kathleen M. Watson, A. S. Watts, A. Waymouth, A. Webb-Jones, Mavis Westmoreland-White, R. O. Wheeler, D. O. Williams, J. O. D. Williams, O. S. Williams, R. A. Williams, R. E. O. Williams, R. B. N. Wilsdon, J. A. J. Wiseman, H. G. Wolskel, F. J. Y. Wood, D. G. Wraith, D. Wynn-Williams, P. T. Yonge, A. MacA. Young, K. D. Young.

Diplomas in Anaesthetics were granted, jointly with the Royal College of Surgeons of England, to the twenty-seven candidates whose names were published in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of June 22 (p. 1039), and Diplomas in Public Health (seven), Psychological Medicine (twenty), and Laryngology and Otology (ten) were granted to the successful candidates whose names were published in the report of the meeting of the Royal College of Surgeons of England in the *Journal* of July 20 (p. 103).

ROYAL COLLEGE OF SURGEONS OF ENGLAND

A meeting of the Council of the Royal College of Surgeons of England was held on July 25, with the President, Mr. Hugh Lett, in the chair.

The Hallett Prize was presented to Miss Audrey Ursula Smith of King's College, London.

It was decided to recognize the Essex County Hospital, Colchester, until July 31, 1942, for the six-months surgical practice required of candidates for the final Fellowship examination in respect of the senior house-surgeon.

Diplomas

Diplomas of Fellowship were granted to John Arthur Dunlop of St. Thomas's Hospital, and Udipi Mohan Rao of Madras and St. Bartholomew's Hospital.

Diplomas of Membership were granted to those candidates whose names are published above in the report of the meeting of the Royal College of Physicians of London.

Diplomas in the following special subjects were granted, jointly with the Royal College of Physicians of London, to the following candidates:

DIPLOMA IN TROPICAL MEDICINE AND HYGIENE.—C. M. Bowker.

DIPLOMA IN OPHTHALMIC MEDICINE AND SURGERY.—Violet M. Attenborough, K. R. Brown, E. Epstein, S. S. Fotadar, G. H. Hair, M. S. Levis, A. Porter, G. E. Robinson, M. Sarwar, J. G. Scott, Dorothy K. Souper.

DIPLOMA IN MEDICAL RADIOLOGY.—G. H. H. Woo.

ROYAL COLLEGE OF SURGEONS OF EDINBURGH

At a meeting of the Royal College of Surgeons of Edinburgh, held on July 28, with Dr. H. M. Traquair, President, in the chair, the following, who passed the requisite examinations, were admitted Fellows:

R. D. H. Bagrie, J. N. Barron, G. A. Craig, A. E. Flax, A. L. Gilbey, E. W. Grahame, B. L. Harbison, R. A. Jamieson, G. E. Langley, S. V. W. Leary, C. W. Maclay, G. F. Pennal, L. V. Phatak, H. W. Porter, D. C. Racker, I. M. Robertson, R. J. Rutherford, K. C. Sarbadhikari, A. H. Thomson, J. A. Weir, G. S. M. Wilson.

The Bathgate Memorial Prize was, after a competitive examination in materia medica and therapeutics, awarded to A. W. Chambers.

ROYAL COLLEGE OF OBSTETRICIANS AND GYNAECOLOGISTS

At the quarterly meeting of the Council, held in the College House, London, W., on July 27, with the President, Prof. W. Fletcher Shaw, in the chair, the following officers were elected to take office in October:

President: Prof. W. Fletcher Shaw. *Vice-Presidents:* Mr. Eardley Holland and Prof. C. G. Lowry. *Honorary Treasurer:* Mr. J. P. Hedley. *Honorary Librarian:* Mr. F. W. Roques. *Honorary Curator of Museum:* Mr. A. W. Bourne. *Honorary Secretary:* Mr. G. F. Gibberd.

The following were formally admitted by the President: *To the Fellowship:* G. F. Gibberd, S. L. Navaratnam (*in absentia*), M. Sarkar (*in absentia*), D. F. C. Wilson. *To the Membership:* Nora L. Keevil, R. C. Percival.

The following were elected to the Membership: A. F. Anderson, J. O. E. Apthorp, W. T. Dingle, M. P. Embrey, D. B. Fraser, A. Herstein, A. B. Higginson, G. S. Lester, S. W. Liggett, R. Murdoch, S. M. Nawab, F. J. P. O'Gorman, Coralie W. Rendle-Short, I. E. J. Thomas, L. O. Watt, S. Way.

Medical Notes in Parliament

Mr. MACDONALD conferred on medical matters with the Parliamentary Medical Committee on July 25. He was accompanied by Miss Horsbrugh and permanent officials of the Ministry of Health. He said that the liaison between the Emergency Medical Service and military hospitals was improving. Discussing the maintenance of health services in evacuated areas he explained that the medical officer of health stayed for this purpose. The Committee raised the treatment of psychoneurosis in connexion with the teaching hospitals. He explained that at present the cases were sent to Mill Hill. He favoured the institution of a revision course for dentists to enable them to be employed as anaesthetists in E.M.S. hospitals.

Medical Supervision in Factories

By the Factories (Medical and Welfare Services) Order, 1940, dated July 16 and published on July 29, Mr. ERNEST BEVIN enacts that the occupier of any factory in which is carried on the manufacture or repair of any munitions of war or of any materials, parts, or tools required for such manufacture or repair, or any work on behalf of the Crown shall, if so directed on behalf of the Minister by the Chief Inspector of Factories or by any other inspector of factories expressly authorized by the Minister to give directions under this Order, make arrangements to the satisfaction of the inspector by way of the whole- or part-time employment of such numbers of medical practitioners, nurses, and supervisory officers as the inspector may specify for one or more of the following services: (*a*) medical supervision of persons employed in the factory in the aforesaid manufacture, repair, or work; (*b*) nursing and first-aid services for such persons; (*c*) supervision of the welfare of such persons. The Order came into force on July 16.

Medical Boards

Mr. BEVIN, on July 23, told Mr. Lyons that a session of a medical board occupied approximately two and a half hours. A board held from one to four sessions a day, and the frequency with which it met varied according to the numbers of men awaiting examination. The number of boards at present in operation was 223, and their work was distributed as evenly as practicable among all the chairmen and panel members, who exceeded 3,600. Both chairmen and panel members were employed and paid on a sessional basis.

Answering Sir Ernest Graham-Little on July 25, Mr. BEVIN said the recent increase in the work of medical boards through the acceleration in the calling up of men had made it necessary to call more frequently on the services of panel members. Additional boards had been set up and the panel members now exceeded 3,000. He was unaware of any general dissatisfaction among medical practitioners against the present method of distributing the work of the boards. Sir ERNEST asserted that complaint was made of unequal distribution of the work. Some practitioners in a district got five or six boards a week: others equally competent got none. Mr. BEVIN replied that that would be a good point for the "doctors' trade union" to raise.

Visors

Mr. EDEN, in answer to Sir Henry Morris-Jones, on July 23, said it had been decided to carry out a large-scale trial with a visor, incorporated in the steel helmet, for the protection of the eyes. Supplies of these visors were beginning to come forward, and it was hoped that the trial would soon take place.

Butter Supplies for Diabetics

Mr. BOOTHBY, on July 23, informed Mr. Graham-White that the question of butter supplies for diabetics and other invalids in connexion with the new rationing scheme had been referred to the Food Rations (Special Diets) Advisory Committee of the Medical Research Council. They were giving it urgent consideration, and a decision would be taken as soon as their recommendation had been received.

Rank in the R.A.M.C.

On July 30 Captain ANSTRUTHER-GRAY asked the Secretary of State for War whether he was aware that doctors conscripted into the Army were being granted senior rank and emoluments to those who joined at the outbreak and had served throughout the war at the expense, in many cases, of considerable civilian practices; and whether he would have this procedure discontinued. Mr. EDEN said he thought Captain Anstruther-Gray had been misinformed, since all the doctors serving in the R.A.M.C. were volunteers.

Convalescent Treatment after Army Discharge

On July 30 Mr. JOHN MORGAN asked the Secretary of State for War if he was prepared to support a scheme for affording convalescent treatment, with adequate family allowances over the period, to all men discharged from the Army with a health breakdown following a short period of Army service, after having been initially passed by a medical board, so enabling many such men to become fit to resume the remunerative jobs they vacated on being called up. Mr. EDEN replied that provision was made for men discharged as medically unfit

for further service in that each soldier so discharged was granted one month's furlough with pay and allowances. Normally the man went home as soon as it was decided to discharge him, and this provision enabled him to have a month's rest if he so desired in which to adapt himself once more to civilian conditions. After the end of the month's furlough, if the disability was attributable to service during the war, the man would receive from the Ministry of Pensions any award of pension appropriate to his case, with family allowance if permissible. Sir FRANCIS FREMANTLE asked if these men actually did convalesce, but Mr. EDEN replied that when a man was sent home the War Office did not control him there.

Health Insurance Income Limit

Mr. MACDONALD has considered the question of raising the income limit beyond £250 per annum under the National Health Insurance scheme so that the law may correspond with the new unemployment insurance scheme. He is not satisfied that the majority of the persons affected desire to be brought compulsorily within the scheme of national health insurance and that the existing facilities for voluntary insurance do not adequately meet the needs of the case. He is, however, continuing his investigations.

Factory Medical Inspectors.—Sir JOHN ANDERSON told Sir Francis Fremantle on July 25 that for the purpose of the administration of the Factories Act the medical inspectors of factories were transferred to the Ministry of Labour at the beginning of July, together with the rest of the Factory Department of the Home Office. They were still available to advise Sir John on workmen's compensation questions relating to silicosis and other industrial diseases.

Medical Care of Home Guard.—In a reply to Sir Francis Fremantle on July 25, Sir EDWARD GRIGG said free medical care and treatment was provided for men of the Home Guard when on duty. It was proposed to take full advantage of the generous offer made by the Central Medical War Committee, for which Mr. Eden was most grateful.

Golden Square Hospital.—On July 30 Mr. ROBERT MORGAN asked the Minister of Health whether, in connexion with hospital arrangements for the civil population, he was aware of the financial difficulties in which certain London hospitals found themselves, among them the Golden Square Throat, Nose, and Ear Hospital ; and if he would investigate this and all such cases with a view to keeping open the hospitals as long as possible in the interests of the community as a whole. Mr. MACDONALD replied that he had no general power to grant assistance to voluntary hospitals, but he was aware that the hospital referred to was experiencing special difficulties, and he had already arranged for an investigation.

Notes in Brief

Officers of the Ministry of Health are allocating large buildings for use as hospitals in the event of the main hospitals needing to be supplemented or replaced in an emergency. Mobile units would use buildings noted in advance as suitable for temporary accommodation of patients.

It is proposed to enlist into the R.A.M.C. for duty in training centres a limited number of chiropodists who are members of associations recognized by the British Medical Association.

Mr. Eden states that so far as his present information goes 113 soldiers lost the sight of one or both eyes during the recent fighting in France.

The June issue of *Industrial Welfare and Personnel Management* is published by the Industrial Welfare Society, 14, Hobart Place, S.W.1, at 1s. It includes an article on essentials of welfare work, with sections on medical examinations, fatigue, hours of work, rest pauses and holidays, and on the maintenance of health in factories. Sir Morton Smart, whose drive for organized physical and electrical treatment for war casualties has roused much interest during recent weeks, contributes an article on physical therapy and industry, based on an address given by him at the Hastings congress of the Royal Institute of Public Health and Hygiene. In this he advocates the establishment of physical treatment institutes for manual workers and stresses the point that treatment in the early stages of minor injuries and arthritis, more especially at industrial clinics, would enable a man to return to effective work quickly, and lessen the tendency to more serious later developments.

Medical News

As already announced, there will be no Educational Number of the *British Medical Journal* this year giving details of the teaching and licensing bodies and of other medical institutions and public services, and the openings for practice and research and postgraduate study. The main reasons for this decision are the acute shortage of paper and the dislocation of the work of medical schools brought about by the war. But though the usual information will not appear in the text pages of the *Journal* of September 7, the advertising pages of that issue will be open to announcements by universities, colleges, and other teaching and examining bodies, and by publishers and manufacturers, etc., who wish to bring their services and goods to the notice of intending students of medicine and newly qualified practitioners.

The fifth annual Hughlings Jackson lecture of the Montreal Neurological Institute will be given at the Institute on October 3 by Dr. Charles H. Best, F.R.S., professor of physiology, University of Toronto, on "The Factors affecting the Liberation of Insulin from the Pancreas."

The tenth International Congress of Dermatology and Syphilology will be held in New York City, U.S.A., in September. Dr. Oliver S. Ormsby is president and Dr. Paul A. O'Leary, Mayo Clinic, Rochester, Minnesota, U.S.A., is executive secretary.

The fifth Pan-American Congress of Tuberculosis will be held at Buenos Aires and Córdoba on October 13–15 under the presidency of Professor Gumersindo Sayago. Further information can be obtained from the general secretary, Dr. Raul Denis, Calle Pasteur 346, Buenos Aires.

The nineteenth annual scientific and clinical session of the American Congress of Physical Therapy will be held at Cleveland, Ohio, from September 2 to 6. Further information can be obtained from the American Congress of Physical Therapy, 30, North Michigan Avenue, Chicago.

The old necropsy house in the grounds of the Philadelphia General Hospital, where Osler worked from 1885 to 1889, was dedicated in restored form as the Osler Memorial Building on June 8, when Dr. Joseph McFarland, pathologist, spoke on "Osler as I knew him," and Dr. W. G. MacCallum, professor of pathology at Johns Hopkins University, spoke on "Osler at Old Blockley."

No small part of the work of the Cicely Northcote Trust, an almoner organization associated with St. Thomas's Hospital, as affected by the war has been concerned with the welfare of patients who had to be prematurely discharged from hospital when war broke out. Journeys had to be arranged, the services of the district nurse had to be secured where these were required, while it was also necessary to ensure that the families of the patients, unexpectedly faced with the care of an ill person, should have sufficient money on which to manage. The Northcote Trust almoners interview patients whenever possible before admission to the ward to discover any home problems which might militate against a return to health, and the record shows how inseparable is almoner service from the service of the medical and nursing staff. It is the almoners who see to it that the discharged patients have an unworried convalescence, who obtain surgical appliances or extra nourishment for patients who need them, and secure work for the partially incapacitated. It would not be easy to find many instances of so much good work carried out on so tenuous an income.

Wing Commander Sir Louis Greig, M.B., has been appointed personal air secretary to the Secretary for Air, Sir Archibald Sinclair.

On the occasion of the last International Congress of Microbiology, held in New York, a Pan-American Society of Microbiology was founded under the presidency of Dr. A. Sordelli of Buenos Aires.

Dr. Haven Emerson has resigned his post as director of the Delamere Institute of Public Health at Columbia University, and will be succeeded by Dr. Harry Stoll Mustard, professor of preventive medicine, New York University College of Medicine.

EPIDEMIOLOGICAL NOTES

Infectious Diseases for the Week

There was a slight rise in the incidence of many of the notifiable diseases in England and Wales; measles, whooping-cough, and enteric fever were exceptions, but the prevalence of these is widespread; the notifications of enteric are over four times as many as in the corresponding week last year.

Poliomyelitis.—It is still too early to judge the epidemic significance of the increase in figures for poliomyelitis. Twenty-six cases have been notified for the week under review, as compared with 16 for the corresponding week last year and 8 for 1938. It is possible that weather conditions are responsible for an unusually early seasonal rise. More than one-half the notifications in the whole country were recorded in one administrative area; in only three areas was there more than one case: Yorks, West Riding 14 (Huddersfield C.B. 1, Harrogate M.B. 8, Knaresborough U.D. 3, Ripon and Pateley Bridge R.D. 2); Lancaster 3 (Heywood M.B. 1, Hindley U.D. 1, Oswaldtwistle U.D. 1); Glamorgan 3 (in Cardiff); Warwick 2 (Coventry 1, Warwick R.D. 1); Worcester 1 (Upton-on-Severn R.D.); Essex 1 (Walthamstow M.B.); Kent 1 (Faversham M.B.); Stafford 1 (Uttoxeter U.D.).

Enteric fever is still prevalent, although mild in character, the majority of the cases probably being paratyphoid infections. No deaths were recorded in any of the four countries this week and only one—in Northern Ireland—last week. More than one-half of the cases occurred in London and the home counties of Middlesex, Essex, Kent, and Surrey, and in only four other administrative areas were there more than 2 cases. London 12 (Stepney 3, Shoreditch 2, and 1 each in the boroughs of Bermondsey, Camberwell, Deptford, Greenwich, Islington, Poplar, and Wandsworth); Surrey 21 (all in the urban district of Coulsdon and Purley); Essex 9 (East Ham 2, Barking 1, Dagenham 1, Ilford 4, Walthamstow 1); Middlesex 6 (Edmonton 3, Harrow 1, Hendon 1, Twickenham 1); Kent 3 (Bexley 1, Sittingbourne and Milton U.D. 1, Strood R.D. 1); Warwick 7 (Birmingham 1, Coventry 4, Solihull U.D. 1, Alcester R.D. 1); Yorks, West Riding 5 (Barnsley 1, Bradford 1, Wakefield 1, Brighouse M.B. 1, Shipley U.D. 1); Chester 3 (in Birkenhead); Northumberland 3 (Newcastle 1, and the urban districts of Ashington and Newbiggin-by-Sea 1 each). Fifteen additional administrative areas in England reported fewer than 3 cases in each.

Registrar-General's Quarterly Returns

Scotland

There were 22,113 births—11,362 males and 10,751 females—registered in the quarter ended March 31, 1940, representing a rate of 17.7 per 1,000 population. Illegitimate births were 5.8% of the total, and are 0.5% below the preceding five years' average for the corresponding quarter. Stillbirths numbered 1,017, equivalent to a rate of 44 per 1,000 total births (including stillbirths). Deaths at 25,937 represented a rate of 20.7 per 1,000 population, the highest recorded in Scotland in any quarter since the first quarter of 1929, when the rate was 22.1, and 4.8 above the preceding five years' average for the quarter. The infant mortality rate was 112 per 1,000 registered live births, or 18 more than the last five years' average, and among legitimate and illegitimate children 108 and 169 respectively.

Northern Ireland

During the quarter 6,467 births—3,339 males and 3,128 females—were registered, equivalent to an annual rate of 20.0 per 1,000 population and 0.4 above the average rate for the first quarters of the preceding five years. Illegitimate births represented 4.9% of the total births. There were 6,597 deaths—3,182 of males and 3,415 of females—equal to a rate of 20.4 per 1,000 of the estimated population and 2.5 above the average of the corresponding quarter of the preceding five years. Infant mortality was 107 per 1,000 births registered compared with 96 in the first quarter of 1939, and an average of 103 for the corresponding quarters of the preceding five years.

No. 28

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended July 13, 1940.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for.: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1940					1939 (Corresponding Week				
	(a)	(b)	(c)	(d)	(e)	(a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	184	14	35	—	3	33	4	8	—	2
Deaths		—	4				—	—		
Diphtheria	726	28	242	23	23	836	85	149	23	19
Deaths	23		12	—	1	9	—	3	—	1
Dysentery	15	1	53	—	—	32	10	27	—	—
Deaths			2	—	—			1	—	—
Encephalitis lethargica, acute	3	1	—	—	—	1	—	1	—	—
Deaths		2	1				1	—		
Enteric (typhoid and paratyphoid) fever	94	12	7	4	1	23	1	7	13	—
Deaths	—	—	—	—	—	—	—	—	—	—
Erysipelas		21	43	3	2		34	57	2	4
Deaths		—	1				1	—		
Infective enteritis or diarrhoea under 2 years										
Deaths	27	5	5	4	5	26	9	3	3	6
Measles*	9,082	31	1,149		17		32	65		3
Deaths	4	1	9	1	—	4	—	—	3	—
Ophthalmia neonatorum	90	4	20		—	112	13	33		—
Deaths										
Pneumonia, influenzal†	457	20	2	—	2	508	40	5	1	5
Deaths (from influenza)	8	—	2	—	1	5	1	—	—	—
Pneumonia, primary			134	4				136	11	
Deaths‡		21		3	3		5		8	4
Polio-encephalitis, acute	4	—				—	—			
Deaths		—					—			
Poliomyelitis, acute	26	—	4	—	—	16	5	1	—	—
Deaths		—	—				—	—		
Puerperal fever	4	4	8	4	—	4	4	8	—	—
Deaths		—					2§			
Puerperal pyrexia	134	12	16		—	188	14	23		2
Deaths										
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	1,262	21	128	32	59	1,838	181	179	44	56
Deaths	—	—	—	—	—	2	—	—	—	—
Small-pox	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Whooping-cough*	738	6	40		8		249	36		5
Deaths	3	—	1	2	1	14	3	5	1	—
Deaths (0-1 year)	295	36	56	20	18	266	36	56	24	14
Infant mortality rate (per 1,000 live births)						42	32			
Deaths (excluding stillbirths)	4,060	622	595	183	121	3,808	702	485	168	111
Annual death rate (per 1,000 persons living)			12.0	12.2	10.6	9.3	9.0	9.8	11.3	9.7
Live births	6,551	991	952	338	229	6,468	1,082	913	414	216
Annual rate per 1,000 persons living			19.3	22.6	20.1	15.9	13.9	18.5	27.8	19.0
Stillbirths	216	30	38			245	41	36		
Rate per 1,000 total births (including stillborn)			38			37	31	38		

* Made notifiable generally on November 1, 1939.

† Includes primary form in figures for England and Wales, London (administrative county), and Northern Ireland.

‡ Since January 1, 1940, figures for London (b) have been for deaths from all forms of pneumonia; the corresponding figures for 1939 relate to deaths from lobar pneumonia only.

§ Deaths from puerperal sepsis.

Letters, Notes, and Answers

All communications in regard to editorial business should be addressed to THE EDITOR, BRITISH MEDICAL JOURNAL, B.M.A. HOUSE, TAVISTOCK SQUARE, W.C.1.

ORIGINAL ARTICLES and LETTERS forwarded for publication are understood to be offered to the *British Medical Journal* alone unless the contrary be stated.

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QUERIES AND ANSWERS

Gas Masks for Asthmatics

Dr. E. M. FRAENKEL (London), in reply to Dr. Bernard Royston's question (July 27, p. 142), writes: I may draw his attention to the modified type of masks which I have had constructed for the treatment of asthmatics. In these a little motor drives the air through the filter by the help of a small ventilating fan. That aids the patient to overcome the sensation of shortness of breath which is probably caused by the psychological effect of the tight mask and not by the negligible increase of resistance by the filter (*British Medical Journal*, 1937, **1**, 438; *Proc. roy. Soc. Med.*, 1937, **30**, 1547). In my experience most of the asthmatic patients can be taught to use an ordinary gas mask if they are trained in its use while they are free from attack, and I have used the respirators for their treatment by protection from air-borne allergens.

Income Tax

X-ray Plant—Depreciation

"GAMMA" has bought *x*-ray plant costing £1,854, and inquires as to the usual rate of depreciation allowed.

*** There appears to be no generally recognized rate, and the matter is one which legally falls to be decided by the Commissioners responsible for the assessment. We believe that 12½% on written-down value is a rate sometimes adopted—plus, of course, the additional one-fifth allowed by statute. It should be remembered that renewal of parts of the plant can be charged as expenses, and that on replacement of the plant as a whole "obsolescence allowance" can be claimed.

Employee—Free Quarters

"W. M." is employed by a dispensary at a fixed salary and has to live on the premises, the rent and rates of which are paid by the dispensary. £10 has been added to the amount of his salary by the income tax authorities as representing the value of his free quarters.

*** Where an employee is required to live in a particular house the advantage so received by him is not "income" within the meaning of the statutes. This was decided in the old case of Tennant *v.* Smith, and more recent decisions have not affected its application to our correspondent's circumstances. If the dispensary were to own its premises somewhat different rules would apply, but the dispensary, and not "W. M.," would be assessable, and the result so far as he is concerned would be the same.

Emergency Medical Service

"E. L." was employed in the E.M.S. whole time from September 3 to December 8, and part time since then. He contends that those earnings should be assessed as part of his general earnings—"otherwise I am paying on two years this year."

*** The E.M.S. salary and fees are legally assessable under Schedule E on the amount of the earnings for the first year. The assessment under Schedule D on his general earnings is, of course, on the basis of the previous year, and any fall in that income that takes place this year will affect the assessment for 1940–1. If, however, "E. L.'s" *total* earnings for the year to April 5, 1940, are not more than four-fifths of his assessed income for that year—that is, under both Schedules D and E—he can claim to have the Schedule D assessment reduced to the amount of his actual earnings for that year. If that condition is not fulfilled "E. L." has no redress.

LETTERS, NOTES, ETC.

Injuries from Lightning

Dr. F. R. HUMPHREYS (on behalf of the Thunderstorm Census Organization) writes from 15, Denton Road, Wokingham, Berks: The publication of my letter (*Journal*, July 8, 1939, p. 98) on injury due to lightning brought me some most interesting cases. Owing to war conditions the Press is supplying very little information at the present time. Lightning still strikes, and the problems connected with it are necessarily important. For example, fracture of the skull by direct impact without any burns seems to be not uncommon. All cases, any date, are interesting, and I should be glad if your readers would furnish me with information about any that come to their knowledge—especially if there is a post-mortem examination, not merely the customary inspection with the aid of a local policeman. I may add that artificial respiration and its use in cases of unconsciousness supposed to be due to lightning is quite rare.

Tobacco and Gastric Disorders in the Services

"VERY MODERATE SMOKER" writes: I think I can suggest a very likely cause for the gastric disorders in the Services. Kindly but misguided people leave money earmarked for cigarettes. The Press run special cigarette funds. The soldier, in addition, gets a ration of cigarettes (I speak of the B.E.F.). Is it any wonder that the number smoked a day was tremendous? Apart from gastric troubles, I fail to see how men can really be fit to march with equipment, smoking as they do. The politician now takes a hand and wants to make cigarettes easier to obtain for the soldier by reducing their price. It almost seems a pity, when the soldier's fitness is now so important. Is it true that the German soldier is not allowed to smoke or drink?

An Economical Chloroform Drop-bottle

Dr. W. ST. AUBYN HUBBARD (Mylor Bridge, Cornwall) writes: I am in the habit of using a large-sized tube of Shell spirit for my petrol lighter. I find that these tubes, when empty, make most convenient receptacles for such liquids as chloroform. The refilling can easily be effected by means of a large syringe and a hypodermic needle. I do not know the composition of these gelatin-like receptacles, but so far as I know it does not appear to be affected by the chloroform. Ether I have not tried. The convenience of being able to carry such liquids in one's bag without fear of breakage or leakage seems obvious, and such tubes should be particularly useful in the Services. They make far better drop-bottles than many of those ordinarily used; one has only to unscrew the stopper and remove the pin-plug to have the contents well under control. No doubt larger types of these receptacles can be obtained if required. Possibly this type of drop-bottle is already in use; if not I suggest that it may be found worth a trial.

Unorthodox Use of Stretcher Slings

Dr. J. M. RAPHAEL (Divisional Surgeon of the St. John Ambulance Brigade No. 30) writes: The communication of Mrs. M. A. Dobbin Crawford (July 27, p. 120), together with the illustrations of the use of stretcher slings, is praiseworthy for its simplicity and effectiveness. Officers instructing the use of improvised stretcher vans should note these suggestions, which no doubt represent a welcome advance in transport of injured.

Back Numbers of the B.M.J.

Dr. G. L. BUCKLEY (29, Poole Road, Bournemouth) writes: We are clearing out copies of old *Journals* up to the year 1936 inclusive. If, however, you have or know of anyone who wants years or odd copies to make up sets please let us know. The list is as follows: *Complete sets.*—1926–27–29–30–31–34–36. *Incomplete sets.*—1928: two missing, April 14, August 11. 1932: one missing, April 23. 1933: two missing, April 15, September 2. 1935: two missing, August 10, October 26.

The Mission to Lepers

The sixty-fifth annual report of the Mission to Lepers, entitled *The Lepers' Challenge*, states that over 13,000 lepers were under treatment for at least three months of last year in fifty-one of its own or aided homes and hospitals. Of this number 1,320 became arrested cases without any deformity (or symptom-free), 604 became arrested cases with some deformity, and 6,914 others improved in varying degree. The Mission works chiefly in India and Burma, but also in other parts of Asia and in Africa. The principal event of the year in China was the completion of the first building of the new hospital for lepers at Chengtu in West China in connexion with the University Hospital. From India it is reported that children with early infection who formerly would have been regarded as offering little possibility of physical improvement are responding to the care and treatment now possible in such cases—a most hopeful and constructive development of the Mission's work.